

THE MINING CONGRESS JOURNAL

VOL. I

No. 8

SAFETY-EFFICIENCY-CONSERVATION

THE
EIGHTEENTH
ANNUAL CONVENTION
OF THE
AMERICAN
MINING CONGRESS

SAN FRANCISCO, CALIFORNIA

SEPTEMBER 20, 21, 22
1915

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AUGUST, 1915

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MUNSEY BUILDING WASHINGTON, D. C.

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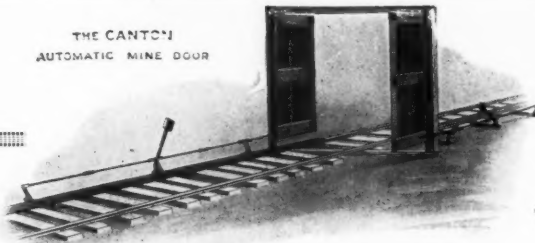
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AUGUST	CONTENTS	1915
DEATH OF DR. JOSEPH A. HOLMES		361
NEVADA CAMPS BOOMING.		366
HISTORY OF GOLD MINING IN EASTERN STATES		367
ARIZONA'S MINERAL PRODUCTION		369
MID-YEAR REPORTS PROVE POPULAR		370
UNITED STATES PROVIDES FOR INJURED ALASKAN WORKERS		370
NEW PICTURES FROM ALASKA		371
BUREAU OF MINES PRODUCES RADIUM CHEAPLY.		372
HOW VANADIUM OCCURS		373
BUREAU OF MINES COOPERATIVE WORK SUCCESSFUL		374
UTAH'S MINERAL PRODUCTION		375
OPPORTUNITY FOR DEVELOPING SOUTHERN GOLD DEPOSITS		376
IDAHO'S MINERAL PRODUCTION		377
RECENT STATE LEGISLATION		378
AMERICAN TIN PROSPECTS BRIGHTER.		380
VAN H. MANNING LIKELY TO HEAD BUREAU OF MINES		381
DEMAND FOR CHEAPER SULPHUR		381
RECENT MINING PATENTS		382
DEATH-RATE IN INDIANA MINERS DECREASE.		384
EDITORIAL		385
REPORT ON DUST EXPLOSIONS NEARLY READY.		390
SEARCH FOR POTASH CONTINUES		391
MINERAL LAND DECISIONS		392
CLAY TALLMAN		394
LATEST TRAFFIC DEVELOPMENT		396
ENGLISH ANTIMONY.		401
RECENT LEGAL DECISIONS		402
DOLLARS AND CENTS VALUE OF LIFE LOST IN MINES		404
BUREAU OF MINES EXPERTS ASSIST POLICE.		405

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Associate memberships are designed for those not actively interested in mining, but who are willing to assist a state Chapter of the Mining Congress in helping to develop the Mining industry within the State. All memberships include subscription to the MINING CONGRESS JOURNAL.

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.....191.....

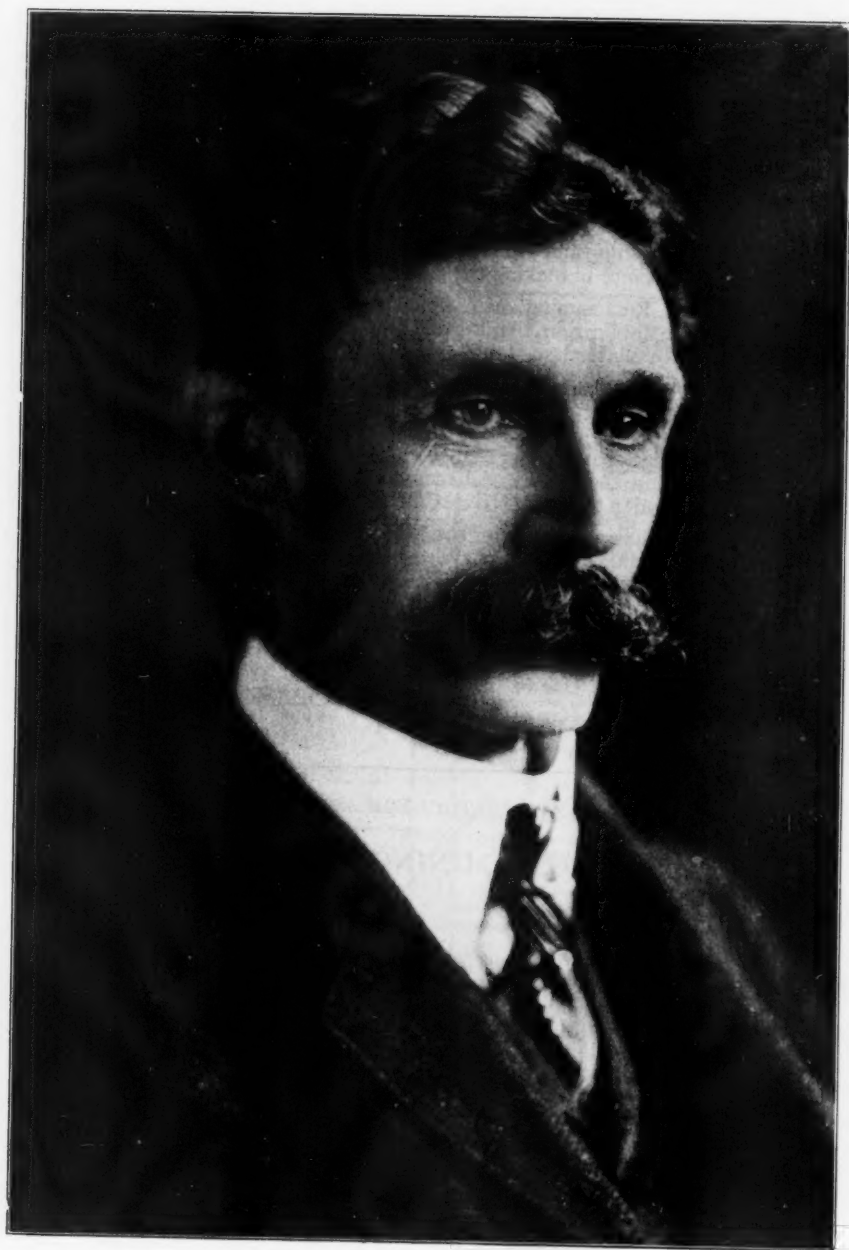
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THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

PASSING OF JOSEPH A. HOLMES ROBS MINING INDUSTRY OF NOTED WORKER

Late Director of Bureau of Mines Sacrificed His Life in Effort to Advance Humanitarian Work in His Charge—Nation's Great Pay Tribute to Man Who Conceived "Safety First" Slogan

Death robbed the mining industry of one of its most efficient leaders July 13, when Dr. Joseph A. Holmes, Director of the United States Bureau of Mines, passed away in Denver.

Dr. Holmes has been called, aptly, the "Father of the Bureau of Mines." There is little question that he is entitled to the credit for having originated the "Safety First" slogan. He is recognized in Washington as having towered head and shoulders above men in his profession. Those who worked side by side with the late director are unanimous in their testimony that his death is due to overwork. Long hours, close confinement, as well as exposure to poisonous gases in mines and the hardships of a professional trip into Alaska are responsible for undermining his never too strong physique.

NATIVE OF SOUTH CAROLINA

Dr. Holmes was born at Laurens, S. C., November 23, 1859. His education was begun in the public schools of South Carolina, and was completed at Cornell University, where he was graduated in 1881. His higher education was largely specialization on the chemistry of explosives, metallurgy, geology, electricity, general physics, surveying and mining. He traveled extensively in the mining regions of the United States, Germany, France, Belgium and Great Britain.

Again he specialized upon two things: the lessening of the loss of life in mines and the waste of resources.

For ten years previous to 1891 Dr. Holmes was professor of geology at the University of North Carolina. From 1901 to 1903 he was geologist for the same state.

At the St. Louis World's Fair he organized and had charge of the Department of Mines and Metallurgy. The success of this exhibit was due to Dr. Holmes' initiative and efforts.

Following the World's Fair, he planned the Government fuel investigations. He was offered supervision of this activity. It was impossible for him to give this work the time that it would require, and at his suggestion a committee was appointed to look after the work. He consented to serve upon the committee.

PROBES EXPLOSION CAUSES

Under the direction of the U. S. Geological Survey, extensive investigations of mine explosions were begun in 1907. This was placed under the supervision of Dr. Holmes. The fuel investigation and the work upon mine explosions brought out the great need for further extension of this work.

Noting the remarkable results of the work being conducted by Dr. Holmes, and having realized for a long time the necessity of more Government aid for the mining industry, the American Mining Congress took the first steps toward the formation of the Bureau of Mines. Throughout the long fight necessary to secure the support for this new Government bureau, the American Mining Congress took the leading part. From the time of the inception of the idea leading members of the Mining Congress urged Dr. Holmes as the most desirable man to direct the bureau. This view was accepted by the Secretary of the Interior and by the President, and resulted in Dr. Holmes' appointment, July 1, 1910.

With the establishment of the Bureau of Mines, Dr. Holmes inaugurated the movement for mine rescue work in this country by private operators, by the states and by the Federal Government. Mine rescue stations are now located in both the metal and coal mining districts of the country.

At the suggestion of Dr. Holmes, President Roosevelt in 1907 secured the appointment, by

the governments of Great Britain, Germany and Belgium, of a distinguished engineer from each to visit the United States. Dr. Holmes with these engineers visited the mining districts of the United States with the idea of ascertaining the extent to which safety practices used in other mining countries might be introduced in the United States.

STUDIES EXPLOSIVES

As a result of this tour and the recommendations made by the noted engineers, Dr. Holmes began investigations of mine explosions by ordering a systematic study of the explosives used in mining, and began a research dealing with the use of electricity in mining.

Dr. Holmes personally took part in mine rescue work whenever possible. He felt that this actual experience was most valuable in guiding him in the general administration of his work.

Another successful work conducted by Dr. Holmes was the structural-material investigations. These had to do with the value of the various structural materials with reference to their fire-resisting qualities. He was one of the first men in the country to call attention to the large per capita fire waste in this country, and aided greatly in the campaign to reduce it.

Dr. Holmes' work dealing with the effects of the San Francisco earthquake and fire on structural materials is regarded as a masterpiece. It has been used as a work of reference by many of the most distinguished foreign experts. This work has since been taken over by the Bureau of Standards.

Public interest in the value of fuels was quickened by Dr. Holmes' work in this connection. He is the author of several papers having to do with this feature of the work.

METAL MINING PROBLEMS

While the Bureau of Mines has paid close attention to the coal mine explosions and the safeguarding of the lives of coal miners, it must not be understood that Dr. Holmes was engaged in this to the exclusion of the work in metal mining problems. He was very familiar with every feature of metal mining, and is responsible for the establishment of the Bureau of Mines Laboratory at Denver, where important discoveries with regard to the recovery of gold from low-grade ores have been made. This same laboratory has done remarkable work in the development of radium in the United States.

Offices of the Bureau of Mines were established by Dr. Holmes in San Francisco and Salt Lake City, with the idea of giving special and intimate attention to the problems of metal mining.

Dr. Holmes was a member of several commissions which investigated smelter fumes. He wrote a considerable portion of the report of the Selby Smelter Fume Commission, and was influential in securing certain adjustments of many of the differences which had arisen between smelter companies and the residents of the vicinity.

One of the very notable works started by Dr. Holmes was the investigation into the mining and health conditions in the Missouri zinc region.

HIS WORK GOES ON

Publications which will be issued by the Bureau of Mines in the next year or more are those planned and ordered by Dr. Holmes. They cover a wide field of activity in which metallurgical problems form a considerable portion. In fact, Dr. Holmes' genius will pervade the Bureau for an indefinite period.

Dr. Holmes is personally responsible for the experimental mine at Brucetown, Pa., which is the only mine of this kind in the world. The importance of this experimental working is emphasized by editorial comment from a London publication, which appears in another column of the JOURNAL.

That the loss in mining and waste in utilizing mineral resources of the United States amounts to more than \$1,000,000 per day was shown by Dr. Holmes. He called attention to the fact that the loss of \$75,000,000 annually is resulting from the use of bee hive ovens in the making of coke. Long before the European War so emphasized their need, he urged the installation of by-products ovens, and the use of the by-products. He compiled figures showing that the annual waste in metals and brass furnace practice amounts to \$4,500,000.

President Roosevelt named Dr. Holmes as one of the members of the National Conservation Commission which had charge of the inventory of the nation's mineral resources.

WAS MINING CONGRESS MEMBER

He was a member of The American Mining Congress, The American Institute of Mining Engineers, and other prominent organizations.

Van. H. Manning, Acting Director of the Bureau of Mines, in commenting upon the death of Dr. Joseph A. Holmes, said:

"In the death of Dr. Holmes, the people of the United States lose one of their most remarkable and efficient public servants. And the saddest part of it all is that Dr. Holmes is a victim of overwork, a too great devotion to the duties which had been assigned to him in behalf of the safety of the million miners in the United States. He was one of the most enthusiastic, indefatigable workers with whom I ever had the pleasure of associating. His mind was continually upon the yearly death toll of the miners, and although taken away in the prime of his life he has accomplished much in reducing the terrible death-rate. In the last five years of his life he saw a slowly but steadily decreasing death-rate and, while it gave him much joy, it only added to his almost superhuman efforts in behalf of the men.

"It is thought that Dr. Holmes' frequent visits to mines in which there were disasters and his continual insistence of going where his trained rescue crews went, sharing the dangers that should have gone only to more robust men, seriously affected his health. His trip to Alaska two years ago to study the great coal fields there resulted in many hardships and severe exposure. It is believed that this hastened the end.

"Dr. Holmes is indeed a martyr to the cause of safety among the miners and his name is

added to the honor roll of three bureau rescuers who have given their lives to this cause. The mining industry suffers a keen loss in his death."

An idea of the devotedness of Dr. Holmes to his work is gained by the knowledge that he at one time was offered \$20,000 a year by the United States Steel Company. At another time he was tendered the presidency of a university, with a salary of \$10,000 a year. It is stated at the Bureau of Mines that various offers of \$10,000 a year were received and declined by Dr. Holmes. His salary as Director of the Bureau was \$6,000 a year.

FUNERAL IMPRESSIVE

The funeral services for Dr. Holmes were conducted at the Church of the Covenant in Washington. The ceremony was attended by a large number of the nation's prominent men. The immense auditorium of the church could not accommodate the vast number of persons who wished to pay this last tribute to a man whose accomplishments were so great.

The honorary pallbearers were: Franklin K. Lane, Secretary of the Interior; Josephus Daniels, Secretary of the Navy; William B. Wilson, Secretary of Labor; Gen. William C. Gorgas, Surgeon General of the Army; Peter M. Wilson, Chief Clerk of the Senate; R. S. Woodward, President Carnegie Institution; Samuel L. Rogers, Director of the Census, and Charles M. Galloway, Civil Service Commissioner.

The active pallbearers were: George S. Rice, Dr. C. L. Parsons, O. P. Hood, Dr. G. A. Hulett, Dr. D. T. Day, and Dr. C. E. Munroe.

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Publications Throughout Country Laud Achievements of Dr. Holmes

Editorials from some publications which commented on the death of Dr. Holmes follow:

A True Public Servant

From the *Journal*, Boston.

Continuous assault upon the United States Government payrolls by professional gougers and place snatchers is not the whole story of our Government service, though the prominence of politically-fed incompetents seems often to obscure rather than emphasize the solid works of the competent and earnest. The record of the late Joseph Austin Holmes, director of the Federal Bureau of Mines, is a token of the best in government and citizenship; it stands as a reminder that behind the blatant army of political roustabouts is the corps of efficient, busy experts who do the real work of government and do it well.

Dr. Holmes' name had been familiar for years in reports and studies relating to mine safety. Since 1910, when President Taft took him from the Geological Survey to head the newly-created Bureau of Mines, Dr. Holmes had devoted much of his time to removing risks from one of the most notorious fields of industrial hazard. The bureau has made big progress. New discoveries in coal mine dangers have been

followed by new safety devices to offset them. Hardly a year has passed without development of some new safeguard originated or encouraged by the bureau. Hundreds of mine horrors have been averted and thousands of lives saved.

Though his death, of tuberculosis, is said to be the direct result of overwork, Dr. Holmes would not have liked the title of martyr. "True public servant" perhaps is the better epitaph.

Should Be On Roll of Honor

From the *Dispatch*, Pittsburgh.

Pittsburgh, and indeed the whole mining industry, will learn with sincere sorrow of the death of Dr. Joseph A. Holmes, director of the Federal Bureau of Mines. In his work here, in connection with the Government Testing Laboratory, and later as organizer of the Mine Rescue Service, Dr. Holmes won many fast and firm friendships. His whole-souled devotion to duty and his missionary zeal in lessening the risk of workers in mines really shortened his days, his death at the age of 55 being due to tuberculosis contracted by his determination to supervise by personal example and experience the details of the work of his bureau in the field. Never robust, the strain was too great. It has been well said that the name of Dr. Holmes rightfully belongs on the roll of honor with his mine rescue workers, who have sacrificed their lives at their posts of duty.

Although he will be remembered chiefly as the "Father of the Bureau of Mines" and its work, Dr. Holmes is credited also with having been the originator of the "Safety First" movement that has swept the country in recent years. He was a type of the scientists who regards his labors as for the benefit of mankind and combined in an exceptional degree the ability to deal with practical conditions and to grapple with the problems of research.

Like Edward A. Mosely

From the *Herald*, Boston.

It epitomizes the career of Dr. Joseph A. Holmes, head of the Federal Bureau of Mines, to say that he aimed to do for the men working underground what Edward A. Mosely of this state has done for the railroad employees of the land, and particularly for the brakemen on the long freight trains.

Loss to Humanity

From the *Herald*, Washington.

The death in Denver of Dr. Joseph A. Holmes, director of the United States Bureau of Mines, is a loss to the cause of humanity. Almost his entire life was devoted to the study of the methods and the perils of mining, with the purpose of providing safeguards against accidents that kill and maim. He was an expert of the highest qualifications in explosives and had acquired a thorough practical knowledge of mining and the sources of its dangers. In the past twelve or more years he found the

opportunity, in the service of the Government, to use his knowledge and experience in the work of saving human life, with the result that the death-rate in the mining industry in this country has been reduced materially. Professor Holmes' tireless efforts were not confined to the prevention of accidents. Under his direction the work of rescue after accidents had occurred was made a science, and hundreds, if not thousands, of lives have been saved because the most modern appliances and methods could promptly be called into service. Professor Holmes was absorbed in this work, to which he gave the closest personal attention, and his death is attributed by his associates to over-exertion and disregard of his own health in his enthusiastic devotion to the service of mankind performed without ostentation or acclaim. With his death a noble career is ended. The greatest tribute which his country can pay him is in the continuation of his great work where he laid it down.

Lessened Life Loss His Memorial

From the *Post*, Boston.

The death of Dr. Joseph Austin Holmes, director of the Federal Bureau of Mines, deserves more than a mere passing note. For what he did in the cause of humanity and for his practical martyrdom to overwork, this man's name should long be held in honored memory by all who toil in the underground places.

Dr. Holmes organized the campaigns of "safety first" in the mines of the country; he trained rescue crews the country over; he proved new theories as to explosions; he underwent mine dangers in order to carry his plans into effect, and the evidence of his service is found in the greatly reduced loss of life in mines since he took charge of the bureau.

The better conditions in all of our mines are a memorial more noble than any of pompous marble or sculptured bronze.

Dies Martyr to Science

From the *Herald-Dispatch*, Utica, N. Y.

Dr. Joseph A. Holmes, director of the Bureau of Mines of the Department of the Interior, since its creation five years ago, died in Denver, it is said, from overwork.

Dr. Holmes was born at Laurens, S. C., on November 23, 1859. He graduated from Cornell as a bachelor of science in 1881. In that year he became professor of geology and natural history and served until 1891. He had since been one of the institution's lecturers. From 1891 to 1904 he was State Geologist of North Carolina. He was in charge of the United States Geological Survey laboratories for testing fuels and structural materials at St. Louis in 1904-07 and subsequently at Pittsburgh. In 1907-10 he was chief of the technological branch of the Geological Survey in charge of the investigations of mine accidents in 1907-10. He was chief of the department of mines and metallurgy at the St. Louis Exposition. Dr. Holmes had been director of the Bureau of Mines since July 1, 1910. He brought up the bureau to a high

state of efficiency. In his devotion to his work he labored so hard that eventually his health became impaired and he has died another martyr to science.

Deserves Well of Country

From the *Times*, Brooklyn.

The man who, in the United States, first drew public attention in a large and important way to the risks run by miners, and in addition directed his great talents to the diminution and alleviation of such risks, deserved well of his country. For this was what might be called the life work of Dr. Joseph A. Holmes, director of the Federal Bureau of Mines, and one of the great geologists of the world. Dr. Holmes' death was brought about by his own labors, and he had sought refuge in vain from tuberculosis in the rarefied air of Colorado.

It is a sad commentary on admirable public services rendered for years by a man whose own health had become impaired by his labors, that his death was necessary to bring out a proper appreciation by the general public of his character and attainments.

Serious Loss to Country

From the *Post*, Pittsburgh.

In the death of Dr. Joseph A. Holmes, the "father of the Federal Bureau of Mines" and its first and only director from its creation, July 1, 1910, the country has sustained a serious loss that will be felt deeply in a personal way by many thousands not only in the mining industry, but generally. In addition to his recognized ability as a geologist, Dr. Holmes was an organizer, a humanitarian and teacher, and had the faculty of making friends. Dealing with the people and having been an instructor in several schools, he recognized the need of expressing his scientific knowledge in a way that could be grasped by everyone. In his pamphlets and lectures he handled technical subjects in a manner that made them of popular interest. In this way he started safety campaigns among the miners and had them studying and talking understandingly of the gases and other dangers of their vocation. It was Dr. Holmes who introduced the oxygen helmet in this country, and it was he who demonstrated that coal dust is an explosive as well as gases.

Pittsburgh will feel the loss of Dr. Holmes practically as one of its sons, and his name will never be forgotten here, because of the work which he did in this city, and directed from it. The mine-testing station which he established here will stand as a monument to him. It is not claiming too much to say that this testing station, which was established in 1907, and the work done in it by Dr. Holmes, were largely instrumental in inducing Congress three years later to form the Federal Bureau of Mines. Thus is Dr. Holmes' place in the history of the country secure. He set in motion movements for safety in mining that should never cease.

Work Shortened Life

From the *Post*, Chicago.

When Congress created the Bureau of Mines and gave it standing as an independent organization, the *Post* advocated the appointment of Joseph Austin Holmes as the chief of the newly made office. The fitness of Dr. Holmes for the place had been proven by his commanding work along lines of investigation into the causes of mine accidents. He was given the appointment and he gave all his energies to the labor in hand. His hard, devoted endeavor unquestionably shortened his life.

Immediately after the creation of the Mining Bureau insidious efforts were made to secure the appointment as chief of a man less militant in effort than Dr. Holmes. Attempts were made to discredit the able investigator who by his work had proved that means could be employed to stop the awful waste of life that each year marked the course of the mining industry. The fight against Dr. Holmes was a part of the struggle of reaction against progress. President Taft withstood pressure and gave the place to the man who had earned it.

The work of Holmes was well started. The foundations that he laid are of the best. It will be a sin to allow the labor to be lost. It will be lost if politics shall enter into the choice of his successor. The man in the Bureau of Mines, whoever he is, in whom Dr. Holmes had greatest confidence as a worthy workman should be promoted to fill the vacancy.

Yields Life for Others

From the *World-News*, Roanoke, Va.

While rulers of warring nations in Europe are bestowing decorations upon soldiers who perform deeds of valor on the battlefields, the Ruler of all rulers continues to crown His faithful servants. We believe a crown of righteousness was given Dr. Joseph A. Holmes, director of the Government Bureau of Mines, who died Tuesday in Denver. Dr. Holmes was a victim of overwork; he yielded his frail life that others might live. Thousands of survivors of mine disasters owe their lives to his skill and devotion. He was known as "The Father of the Bureau of Mines." Whenever a mine accident was reported and men who delved under ground were imprisoned, Dr. Holmes and his crew of experts hurried to the scene of disaster, taking with them a rescue car. This car is equipped with many life-saving devices and the results achieved by it through Dr. Holmes and his assistants will be long remembered.

When news dispatches told of the death of Dr. Holmes, they gave only the cold facts of his going. They failed to tell of the many women and children in great mining sections of America who had learned to love and honor the man at the head of the Bureau of Mines.

Dr. Holmes directed his rescue work and all his other activities in a simple, kindly and quiet way. A man without ostentation, of gentlemanly bearing, and with a heart that throbbed in sympathy for suffering humanity, he gave his

time and talents and finally his life for the miners.

We believe this man of the mines has heard a voice say "Well done, good and faithful servant!"

Martyr to His Work

From the *Post*, Washington.

Joseph A. Holmes, the director of the Bureau of Mines, died a martyr to his work. He literally devoted his life to the cause of mining safety, in which he had been interested for many years. The government service has seldom included a man who took his task more earnestly or who gave himself so unselfishly to his duties. Working for years along the lines of mine safety, he was ideally equipped for the directorship of the new bureau upon its creation in 1910, and with the increased facilities afforded he had in the four years of his active work in that position invaluable supplemented his earlier endeavors to make mining in this country less destructive of human life. That mining disasters continue to occur only emphasizes the value of his accomplishments. He was striving continually toward the ideal of safe mining, studying every conceivable method for the prevention of disaster and the education of miners in safety methods. Every man who goes beneath the surface of the earth in the great organized attack upon the hidden resources of the planetary structure owes a debt of gratitude to Joseph A. Holmes, who deserves a perpetual memorial, that if shaped in accordance with his known desires will probably take the form of a research endowment for the prosecution of the task to which he gave himself.

Memorial Suggested

From the *Times*, Washington.

The miners of this country, indeed the miners of the whole world, could do no more appreciative deed, no more deserved honor, than to erect with their own money a memorial to Dr. Joseph A. Holmes, director of Federal Bureau of Mines, who has just died in Denver a victim of his overwork in their behalf. Dr. Holmes, besides being admirably fitted for his work in an educational way, brought to his position an unwearying endeavor to better the conditions surrounding the underground laborer. The inventor of the slogan, "Safety First," he made it not only popular, but effective. In his work he never sent his men into a danger which he was not willing to risk himself, and never left a threatened spot until his coworkers went with him. Even in their own ranks the miners of the world never had a better friend.

Loses Best Friend

From the *Black Diamond*.

Dr. Joseph A. Holmes, the Director of the United States Bureau of Mines, died on Tuesday July 13. The coal trade will think, and properly so, that it has lost its best friend. The metal mining industry will think, and properly so, that it has lost its best advocate. The

people of America will think, and properly so, that they have lost their best advocate of practical conservation.

With all partisans claiming this man as their own, the fact stands out that he boldly represented all America. He was in the broadest and best sense the public's man.

Many will try to fashion a phrase which will tell what this remarkable man meant to America. Only one paragraph properly covers that subject and it came from his own pen. He said:

"The resources which have required ages for their accumulation, to the intrinsic value or quality of which human agency has not contributed, which when once exhausted are not reproduced and for which there are no known substitutes, must serve as a basis for the future no less than the present welfare of the nation. In the highest sense, therefore, they should be regarded as property held in trust for the use of the race rather than for a single generation, and for the use of the nation rather than for the benefit of the few individuals who may hold them by rights derived from the state, the original owner."

Dr. Holmes, when he said those few simple, straightforward words, stepped out upon that broad plane which is of American statesmanship. To have been able to say that and to stand for it puts him down as one of America's great men. We will let that single paragraph stand as his eulogy, his life history and his epitaph.

Leaves Rich Legacy

From Mining Press.

With deep regret we record the passing of Joseph Austin Holmes, Director of the United States Bureau of Mines. This organization was created largely on his initiative and it was proper that he should have been its first administrative chief, having regard also to his fitness for its duties. He died at Denver on July 13 from a pulmonary illness that was known, among his friends, to set a definite limit to his life-work. Like Clarence King, under similar circumstances, he went first to Phoenix and then to Denver, without avail. Only 56 years of age, he had been Director of the Bureau of Mines for just five years, and a technologist on the Geological Survey for the six years preceding, during which period he had achieved honorable distinction as a clever, energetic, and persuasive official. Indeed, he combined tact with sincerity, technical ability with the humanities, energy with foresight, to such an exceptional degree as to render him peculiarly suited to direct the splendid work of the Bureau. He has set an example for those that follow. That is his legacy to his professional friends.

Important Bulletin Coming Out

A bulletin of importance will be issued this fall by the Geological Survey. It deals with the useful minerals of the United States. It was written by F. C. Schrader.

BURRO MOUNTAIN COPPER DEPOSITS TO BE STUDIED

Secondarily enriched copper deposits in the Burro Mountains of New Mexico are to be the subject of study by the United States Geological Survey this summer. The work will be in charge of Sydney Paige. A detailed map of this copper region is being prepared.

MINES IN BLACK HILLS ARE GOOD FOR LONG TERMS YET

After four years of studies of Pre Cambrian geology in the Black Hills, Sydney Paige, a geologist of the Federal Survey, has completed his report on this important mining section. It will not be ready for distribution under eighteen months.

This report will throw some light on the origin of the Homestead ore body and will discuss in detail the mines of the district.

It is Mr. Paige's conclusion that the future of the Black Hills is promising; that its mines are good for long terms, and that the ore production of the district has not reached its zenith.

Studies Cuyuna Iron

E. C. Harder is doing field geology in Cuyuna iron, and also is carrying out a study of the action of bacteria in causing the deposition of iron ores.

New Jersey Zinc Figures Out

New Jersey produced, in 1914, 144,312,560 pounds of recoverable zinc. New Jersey produces no gold, silver, copper or lead.

NEW NEVADA MINING CAMP ATTRACTS MUCH ATTENTION

One of the promising mining camps in Nevada, in the opinion of geologists, who recently have visited the locality, is the district tributary to Rochester. This is a comparatively new camp. A railway is in progress of construction from the nearest point on the Southern Pacific, which is 9 miles away. Construction work has been completed, as far as the mill and is being continued 4 miles farther to the town. An indication of the general interest that is being taken in this camp is the fact that the supply of Geological Survey bulletins covering a part of this district which were printed last year, was exhausted quickly. It was reprinted and the new supply bids fair not to last much longer. New ore bodies have been opened in several of the principal mines. Prospecting is being conducted very actively and new mills are being erected. A great advantage has been obtained by the consolidation of certain companies where the ground can be worked to the best advantage under one management.

EASTERN STATES ARE PIONEERS IN MINING GOLD, HISTORICAL SKETCH SHOWS

European Explorers Found Gold in Possession of Florida Indians in 1516—
Nugget Found in Virginia in 1482—Georgia Formerly
Produced One-fifth of United States Yellow Metal

There is much of interest to mining men throughout the country in the historical review of gold production in the eastern states, which soon is to be published by the Geological Survey. It is the work of J. P. Dunlop. A few extracts from this report follow:

"Notwithstanding the relatively small gold production from the southern Appalachian states in recent years, it is of interest to recall that the first gold mining in the United States did not take place in the western states and that prior to the discovery of gold in California the southern states had yielded over \$12,000,000.

"As early as the year 1516 a small quantity of gold is said to have been obtained by European explorers from the natives of Florida. There is, however, no record of any mining, and it is probable that the gold, which was used for ornaments, was picked up by the Indians in streams or after heavy rains and not obtained by panning or other methods involving labor or even primitive washing equipment. Even in the last few years small nuggets have been picked up by farm hands and others in localities in which no regular mining is done. Thomas Jefferson describes a lump of ore which yielded 17 pennyweights of gold, which was found on the Rappahannock in Virginia in 1782. A nugget of gold was found at the Reed mine in Cabarrus County, N. C., in 1799, but no mining was done for several years, or until about 1804. Gold was also discovered in Montgomery County soon afterward, and in Anson County in 1829. From 1804 to 1825 all the gold produced in the United States came from North Carolina and the total amount, so far as Mint records show, was only \$110,000, which was all obtained from surface placers. In 1825 gold-bearing ore in place was found in Montgomery County and soon afterward quartz veins were found in Mecklenburg County. The production from these new mines was so large that development work was extended to Guilford, Davidson, Union, Rowan, and other counties.

MADE COINS OVERWEIGHT

"The estimated production of gold in North Carolina increased from \$46,000 in 1828 to \$134,000 in 1829, and to \$475,000 in 1833. A curious bit of history affecting the accuracy of the statistics is the coinage of gold by one Bechtler in North Carolina about 1833, and for years afterward. It is said that for some time these coins and Mexican silver constituted the chief currency of large districts. To insure their reception the Bechtler coins were made slightly overweight which, of course, led to their

rapid disappearance. The largest yield recorded in any year was that of \$845,793 in 1849, and the estimated total output of gold from North Carolina to the end of 1914 is \$23,416,357, or nearly one-half of the entire yield from the southern Appalachian states.

DISCOVERED IN 1829

"In 1829 gold was discovered in Habersham County, Ga., and explorations were soon extended to Hall and Carroll counties and to the Nacoochee Valley region in White County, and the Dahlonega district in Lumpkin County. Many of the placer deposits were rich and easily worked, so that active mining followed the discoveries. The greater part of the gold output of early years was derived from placer mining and the production from Lumpkin County has probably been greater than from any other county. The period during which the most gold was recovered was between the years 1838 and 1848, when the estimated yield from Georgia was about \$3,582,000, or about one-half of the total gold output of the United States during that time. A branch of the United States Mint was established at Dahlonega in 1838, which coined \$6,115,569 in the period 1838-1861. The total gold production of Georgia for the period 1829-1914 is estimated at \$17,752,627. The yearly output has not amounted to as much as \$200,000 since 1883 and has not been as much as \$100,000 in any year since 1902.

BEGAN IN 1830

"There does not appear to be any record of the first mining in Alabama, but it probably dates from about 1830 or shortly after the gold excitement commenced in Georgia. The estimated production up to 1879 was \$365,300, and the yearly output from 1880 to 1903 varied from \$1,000 to \$8,000 a year. Unlike most of the southern states, the period of greatest production has been in recent years, or from 1904 to 1910. This was due mainly to the yield from deep mines, including the Hog Mountain in Tallapoosa County, and the Storey in Talladega County. The estimated total yield of gold from Alabama to the end of 1914 is \$749,384.

"The earliest reported discovery of gold in Maryland is mentioned in the proceedings of the American Philosophical Society, page 85, 1849, when mention is made of the occurrence of quartz veins, carrying gold, on the Samuel Ellicott farm in Montgomery County. If any mining was done, the output must have been small, for the total estimated output up to the year 1879 was only \$2,500. The total produc-

tion of gold from Maryland mines to the end of 1914 is estimated to have been \$71,339. Most of the yield has been derived from mines in Montgomery County, near Great Falls, but part of the production has come from the smelting of copper ores from Frederick County. The gold mines of Montgomery County, Md., have been described by Emmons.

"The first gold sent to the Mint from South Carolina was in the year 1829 and from mines in Chesterfield and Lancaster counties in 1830. The Brewer mine in Chesterfield County was one of the most important of the early producing properties and has probably produced several hundred thousand dollars. The gold output of South Carolina (as estimated by the United States Mint) from 1829 to 1853 amounted to \$1,085,491, and the yield only exceeded \$100,000 in one year, 1852. The Dorn mine in the Abbeville district was one of the most active and productive mines in the south in 1852 and 1853. In South Carolina, since 1890, the yield has frequently exceeded \$100,000 a year, and the greatest yield was in 1899 when the gold recovery was over \$160,000. The Haile mine in Lancaster County has yielded more gold than any other mine in the southern states. The upper oxidized portions of the ore bodies were rich and the mine has been worked more or less continuously since 1830. The gold from ore from the Haile mine was obtained by stamping and amalgamating in early years. When the upper oxidized ore bodies had been exhausted, Adolph Thies, the manager of the property, devised a method of concentration, roasting, an chlorination, by which the low-grade sulphide ore bodies were treated cheaply and efficiently. Spilsbury gives the production up to the end of 1883 as over \$1,250,000, and it has been the largest producer in the state since that year, so that its total production is probably more than \$3,000,000 out of a total of \$5,176,237, the estimated total gold production of the State of South Carolina to the end of 1914. Th mine was visited and described by Graton.

"The estimated production of gold from Tennessee to the end of 1914 is \$230,217, during which period the yield has seldom exceeded \$10,000 in any one year and has frequently been only a few hundred dollars annually. Of the total, about \$155,000 was produced during the period 1831 (when the Mint has the first recorded output) to 1879. From 1880 to 1903 the annual yield of gold was usually less than \$1,000. Since 1904 practically all the gold has been obtained from the electrolytic refining of copper from the mines in Polk County. Much of the gold produced prior to 1903 or 1904 came from placer mining in Monroe County. These placer mines, however, have not reported any output for several years.

"After the date of Thomas Jefferson's note, referring to the discovery of gold in Virginia in 1799, the next discovery of gold seems to have been in 1829, when the Mint credits Virginia with a gold yield of \$2,500. Professor Silliman visited the mines, which were mainly in Goochland, Louisa and Culpepper counties, in 1836. The mines apparently were worked steadily, as the Mint estimates credit Virginia with a

yearly production varying from \$24,000 to more than \$100,000 up to the year 1853, and a production of \$3,091,700 for the period 1829 to 1879. Since 1880 the yearly output has seldom been as much as \$10,000 a year, and the gold mines in Goochland and Fluvanna counties have been operated intermittently. A considerable portion of the gold credited to Virginia since 1904 has been derived from copper ores shipped from the Cabin Branch pyrite mine in Prince William County.

"The estimated total gold output from Virginia to the end of the year 1914 is \$3,293,407.

"The total yield of gold from 1799 to the end of 1914 has been \$50,689,568, of which Alabama produced \$749,384; Georgia \$17,752,627; Maryland \$71,339; North Carolina \$23,416,257; South Carolina \$5,176,237; Tennessee \$230,217; and Virginia \$3,293,407."

DR. BAILEY WILLIS TAKES GEOLOGICAL CHAIR IN WEST

Dr. Bailey Willis, of the United States Geological Survey, has accepted a position as director of the department of geology and mining, at Leland-Stanford University, California.

The place was made vacant recently by the resignation of Dr. John C. Branner, President of the University. Dr. Branner headed the department of geology and mining for twenty-three years. He will continue as President of the University.

OIL INVESTMENTS IN THE U. S. TOTAL MORE THAN \$600,000,000

Owing to the rapid rise of the petroleum branch of the mining industry, its importance oftentimes is not realized fully. In the United States there is invested in oil well development \$600,000,000. This is being added to rapidly.

The most notable development of oil has taken place in California, but Oklahoma, Pennsylvania, Texas, Louisiana and other states are not far behind.

In California the production of petroleum is at the rate of 100,000,000 barrels per year. This means that \$50,000,000 is flowing into the coffers of the owners of these wells every year.

The gold production in California aggregates \$1,500,000,000 since 1849. Today California oil wells are producing two and one-half times as much as her gold mines.

IMMIGRATION WILL NOT INCREASE AFTER WAR, IT IS SAID

"If the people of this country are looking forward to a heavy immigration from Europe following the close of the great war, I am sure they will be greatly disappointed, and I am not making this statement on belief. It is the result of investigation," said L. P. Cotter of New York, who was in Washington last week. Mr. Cotter is representative of steamship lines which have made a specialty of encouraging emigration from Europe.

"After the war is ended," said Mr. Cotter, "each one of the nations will face the immense

task of rehabilitating its internal economies, and the first thing they will discuss is that the youth of each country has been sadly wasted. Even those who return, to some extent, will have had that spirit necessary for industrial content taken from them. This will leave the very young men and those past middle age to take up the affairs of the nation, build commerce as if it were a new venture and plan for the year to come. This will require the energy of the younger men to be applied at home, directed by the counsel of the older men."

WASHINGTON'S PRODUCTION OF METALS DECREASES SLIGHTLY

Unsettled Conditions at Republic, in Ferry County, Blamed for Falling off in Gold Output

The value of the gold, silver, copper, and lead produced in Washington in 1914, as shown by the report of C. N. Gerry, of the United States Geological Survey, was \$809,767, compared with \$1,053,135 in 1913 and \$1,120,214 in 1912.

The production of gold was valued at \$557,173, a decrease of \$139,102, due principally to the unsettled conditions at Republic in Ferry County. Only one mill was active, and the production of the Surprise, Lone Pine, Pearl, and Knob Hill mines was less than that of former years.

The output of silver decreased from 331,239 ounces, valued at \$200,068, in 1913 to 264,861 ounces, valued at \$146,468, in 1914. There was no material change in Ferry County, but the production of silver in copper ores of Stevens County was somewhat less.

Copper decreased from 954,081 pounds, valued at \$147,883 in 1913, to 778,728 pounds, valued at \$103,571 in 1914. The United Copper Company at Chewelah was idle during part of the year as a result of war prices.

Lead decreased from 202,487 pounds, valued at \$8,909, to 65,507 pounds, valued at \$2,555, in 1914. No zinc ore has been shipped since 1911.

Ore sold or treated was 95,947 tons in 1914, against 115,685 tons in 1913, a decrease of 19,738 tons, or 17 per cent. This tonnage was divided as follows: 57,834 tons of crude ore shipped to smelters, 24,533 tons treated in gold and silver mills, and 13,580 tons treated in concentration mills. There were sixty-seven producing properties, of which fifty were lode mines and seventeen were placers. The value of the output of Ferry County was \$625,173, and of Stevens County \$144,092.

ARIZONA MINERAL PRODUCTION SHOWS DECREASE IN 1914

Gold, silver, copper, lead and zinc mined in Arizona during the year 1914, amounted to \$59,956,029. This is a decrease of \$10,000,000 as compared with the output of 1913. This production came from 395 mines. Production by counties in the order of value of mineral production, is as follows:

Cochise.....	\$23,578,741
Gila.....	9,970,219
Greenlee.....	8,745,802
Pinal.....	8,177,998
Yavapai.....	5,528,565
Mohave.....	2,719,070
Maricopa.....	569,196
Santa Cruz.....	410,082
Yuma.....	64,890
Coconino.....	2,701

Production of gold, silver, copper, and lead at mines in Washington, in 1914, by counties.
(Advance figures by C. N. Gerry, U. S. Geological Survey.)

County.	Number of producers.	Ore treated.	Gold.*	Silver.*	Copper.	Lead.	Total value.
		<i>Short tons.</i>	<i>Fine ounces.</i>	<i>Fine ounces.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
Chelan.....	3	264	76.19	28	104		\$1,604
Clallam.....	1		5.32	2			111
Ferry.....	17	68,084	24,829.73	163,674	159,142	5,603	625,173
Kititas.....	11	5	212.23	71			4,426
Okanogan.....	12	720	131.77	8,039	16,081	22,391	10,182
Skamania.....	1	1		5	142		22
Snohomish.....	6	495	349.12	1,371	263	1,317	8,061
Stevens.....	11	24,536	575.37	91,480	602,996	36,196	144,092
Whatcom.....	4	1,842	756.34	188			15,739
Whitman.....	1		17.17	3			357
Total, 1914.....	67	95,947	26,953.24	264,861	778,728	65,507	809,767
1913.....	57	115,685	33,682.30	331,239	954,081	202,487	1,053,135

* Includes placer production.

MID-YEAR REPORTS OF MINERAL INDUSTRIES PLEASE

**Figures and Information Brought Up to Date
by Geological Survey—Much Data to
be Given Out on Receipt**

Evidence is at hand that one of the most popular things undertaken recently by the Geological Survey, was the issuing of current reports on mineral production at the end of the fiscal year. Many important features affecting mining were covered in these reports. They brought many of the activities in minerals right up to date. This is in pursuit of the policy of the Survey to give out all information as soon as it is received, unless it is of a confidential nature.

One of the objections to the work of the government bureaus, is that reports require so long for preparation and printing, as to make them of reduced usefulness when ready for distribution. Two years is not an uncommon length of time to transpire from the date of taking of the field notes, until the issuing of the printed report. It has been demonstrated that scientific reports of this kind cannot be handled hurriedly.

The Survey is proving, however, that many of the salient features in these reports can be given to the public almost immediately after the data have been collected.

Very wide publicity was given to the reports issued at the end of the fiscal year. Good results from this are appearing in many ways, according to the Survey, where a careful watch is maintained for evidences of public interest in its reports or where its findings have led to helpful utilization.

Due to the success of this effort the Survey intends to make an effort to place more and more information in the hands of the public as soon as it becomes available.

Much of the information for the fiscal year reports was obtained by telegraph. The figures on production of many of the minerals, covered the output of the more important properties, to within a few days of the end of the fiscal year.

These reports were widely circulated and before this time have appeared in the technical and daily press throughout the country.

The importance attached to these reports may be judged from the amount of space given them by the financial press. *Financial America*, for instance, thought enough of this material to use it on its first page as one of its leading articles. More than two columns of the matter were used.

In its editorial columns, this very prominent financial journal declared that "the mid-year reports are an innovation which is as welcome as it is useful. Continuing, it comments very complementarily upon the general idea of getting out Government information while it is news, and before it becomes useless for any other purpose than embodiment in a history.

GOVERNMENT WILL COMPENSATE THOSE INJURED ON ITS RAILROAD

**Workers in Alaska to Have the Benefit of
Identical Protection Given Employees
on the Panama Canal**

President Wilson has approved an order, prepared by Secretary Lane, of the Department of the Interior, putting into effect "a system of compensation for accidents which may occur on the work of constructing railways in Alaska."

The order, in effect, is a supplement to the Executive Order of April 10, 1915, which established the route and termini of the Government railroad in Alaska, and by which Secretary Lane was authorized to prepare and adopt a system of compensation for employees who might be injured or incapacitated in the line of their duties in the work of Alaskan railway construction. Attorney General Gregory held that the order was legal and proper.

The system adopted by Secretary Lane, which goes into effect at once and continues in force until further orders, is an extension of the act governing the Panama Canal, the Reclamation Service, and the Bureau of Mines, and provides as follows:

"Employees of the Alaskan Engineering Commission shall have the right to receive compensation for injuries sustained in the course of their employment while actually in the Territory of Alaska at the rates and in the amounts and on the conditions provided in the act entitled 'An act granting to certain employees of the United States the right to receive from it compensation for injuries sustained in the course of their employment,' approved May 30, 1908. Claims for compensation account of injury or death resulting from an accident thus occurring hereafter shall be settled by the Chairman of the Alaskan Engineering Commission, who shall as to all such claims, and under such regulations as he may prescribe, perform the duties which under said act are placed upon the Secretary of Commerce and Labor, provided that when an injury results in death claims for compensation on account thereof shall be filed with him within one year after such death."

Secretary Lane also directs that the Alaskan Engineering Commission shall make no charge for the service of its medical or surgical officers rendered to an employee thus injured in Alaska or to any person who, while under contract with the Commission, is injured in Alaska in the course of the Government's railway construction. This provision covers possible injuries to "station men," who perform work under contract. The order further provides that "in case such injury of such person not an employee be such that the Chairman of the Commission shall deem it beneficial that he shall be conveyed to any other point in Alaska or to the city of Seattle for medical or surgical treatment not available at the place where such injury occurs," the Commission shall pay the patient's transportation.

NEW PICTURES FROM ALASKA



LATEST PHOTOGRAPH OF BEAVER ON THE YUKON RIVER



TEMPORARY LANDING MADE FOR USE IN CONNECTION WITH CONSTRUCTION ON THE GOVERNMENT RAILROAD—STERN-WHEELER CHULITNA IS TIED UP AT THE DOCK

BUREAU OF MINES DEMONSTRATES ITS ABILITY TO PRODUCE RADIUM CHEAPLY

The Secretary of the Interior, in a Formal Statement, Tells of Successful Work Done at Colorado Mines and Laboratory—Gram of Metal Costs \$36,050 to Produce

Radium production in Colorado has been reduced to a successful manufacturing basis, according to a formal statement given out recently by the Secretary of the Interior. Mr. Lane declared that the value of radium in treating cancer is being recognized by increasing numbers of physicians.

Mr. Lane states that the production of radium from Colorado carnotite ores by the Bureau of Mines, in connection with the National Radium Institute has passed the experimental stage in its new process and is now on a successful manufacturing basis. He also declared that the statements made to Congress concerning the ability of the Bureau of Mines to produce radium at a greatly decreased cost over other processes actually had been accomplished and that the costs were even less than predicted.

COST IS \$36,050

"The cost of one gram of radium metal produced in the form of bromide during March, April and May of the present year was \$36,050, I am informed by Dr. Charles L. Parsons, in charge of the radium investigations of the bureau," the secretary said. "This includes the cost of ore, insurance, repairs, amortization allowance for plant and equipment, cost of Bureau of Mines cooperation, and all expenses incident to the production of high grade radium bromide. When you consider that radium has been selling for \$120,000 and \$160,000 a gram, you will see just what the Bureau of Mines has accomplished along these lines.

"The cost of producing radium in the small experimental plant during the first few months of the Bureau's activities was somewhat higher but not enough to effect seriously the final average.

"The public, however, should not infer that this low cost of production necessarily means an immediate drop in the selling price of radium. The National Radium Institute was fortunate in securing through the Crucible Steel Company the right to mine ten claims of carnotite ores belonging to them and this was practically the only ore available at the time. Since then new deposits have been opened but these are closely held and according to the best judgment of the experts employed by the Bureau of Mines the Colorado and Utah fields, which are much richer in radium bearing ores than any others known, will supply ore for a few years only at the rate of production that obtained when the European war closed down the mines.

DEMAND WILL INCREASE

"The demand for radium will also increase rapidly, for the two or three surgeons who have a

sufficient amount of this element to entitle them to speak from experience are obtaining results in the cure of cancer that are increasingly encouraging as their knowledge of its application improves. A few more reports like that presented to the American Medical Association at its recent San Francisco meeting and the medical profession as a whole will be convinced of its efficacy. Under all the circumstances that have come to my knowledge it does seem to me that it behooves the Government to make some arrangement whereby these deposits, so unique in their extent and their richness, may be conserved in the truest sense for our people, by extracting the radium from the ores where it now lies useless and putting it to work for the eradication of cancer in the hospitals of the Army and Navy and the Public Health Service.

"The ten carnotite claims being operated at Long Park, Colorado, by the National Radium Institute already have produced over 796 tons of ore averaging about 2 per cent. uranium oxide. The cost of ore delivered at the radium plant in Denver has averaged \$81.30 per ton. This included 15 per cent. royalty, salary of Bureau of Mines employees, amortization of camp and equipment and all expenses incident to the mining, transportation, grinding and sampling of the ore.

SIZE OF PLANT DOUBLED

"A concentrating plant for low grade ores has been erected at the mines and is successfully recovering material formerly wasted. Grinding and sampling machinery has been installed at Denver and a radium extraction plant erected in the same city. The radium plant has now a capacity of 3 tons of ore per day, having been more than doubled in size since last February. Before that time the plant had been run more or less on an experimental scale although regularly producing radium since June, 1914. To July 1, slightly over 3 grams of radium metal had been obtained in the form of radium barium sulphate containing over 1 milligram of radium to the kilogram of sulphates. The conversion of the sulphates into chlorides and the purification of the radium therefrom is easily accomplished and with very small loss of material. Unfortunately, however, special acid proof enamel ware, obtainable only in France, has not been delivered of sufficient capacity to handle the crystallization of the full plant production, so that a little less than half the output, or to be exact, 1,304 milligrams of radium element have been delivered to the two hospitals connected with the National Radium Institute. The radium remaining can be crystallized at any time from neutral solution in apparatus already installed, but the greater

rapidity and efficiency of production of this very valuable material by the methods used have decided the Bureau of Mines to await the completion of apparatus now being built before pushing the chloride crystallization to full capacity.

"The average radium extraction of all ore mined by the National Radium Institute has been over 85 per cent. of the amount present in the ore as determined by actual measurement. The amount present in the ore has been found in fact to be essentially the same as the theoretical amount required by the uranium-radium ratio. The extraction figures for the last five carloads of carnotite treated has shown a recovery of over 90 per cent. in each case.

"A bulletin giving details of mining, concentration and methods of extraction is being prepared by the Bureau of Mines and will be issued early in the fall."

This interview is an effective and complete answer to an article by Warren F. Bleecker, in the March issue of *Metallurgical and Chemical Engineering*, as well as an article by Charles H. Viol in the March number of *Radium*. Each of these articles attacks the Bureau of Mines and discredits its activities.

TENNESSEE'S ZINC PRODUCTION SHOWS DECIDED INCREASE

Tennessee's production of gold and silver, as shown by statistics, has just been made public by the Geological Survey. The gold and silver are produced entirely in refining copper, in the Ducktown district. One of the features of 1914 was the large increase in the amount of zinc produced in Tennessee. The American Zinc Company, as well as other concerns, has been very active in the zinc production in the eastern part of the State.

VANADIUM DOES NOT OCCUR IN PARTICULAR TYPE OF ROCK

Interesting information in regard to vanadium just has been furnished, upon request, by the Geological Survey, and is as follows:

Vanadium occurs in Colorado in two forms; in the vanadium mica rescoelite which in minute flakes impregnates a fine-grained sandstone to which it gives a sage green color; and in carnotite, a canary yellow hydrous potassium uranium vanadate, which is also found in sandstones. At Minas Ragras, Peru, where the largest known deposits of vanadium occur, the vanadium is apparently in the form of a sulphide in an asphaltite vein. The sulphide is known as patronite.

In Spain and the southwestern United States, vanadium occurs as vanadinite—a lead-chlor-vanadate in quartz veins cutting various rocks. These are the principal types of vanadium deposits. Vanadinite, so far as is known to the Survey, occurs in large quantities, mostly in arid and semiarid regions. Vanadium-bearing sandstone has been found in large quantity nowhere except in Colorado and Utah. Some asphaltites carry small quantities of vanadium, but none—unless the vein

at Minas Ragras be so considered—are known to carry enough vanadium to make them commercially valuable for that metal.

It is not safe to say that vanadium is found in any particular type of rocks, although in any one region it would be well to look for vanadium under conditions similar to those in which it is known to occur in other parts of the same area. The largest use of vanadium is as an alloy in steel, for which purpose it is made into ferrovanadium, an alloy of vanadium and iron. As ordinarily made, this alloy contains from 20 to 30 per cent. of vanadium. Ferrovanadium now sells, in large lots, at from \$1.90 to \$2.50 a pound for the contained vanadium.

GOLD PRODUCTION OF EAST SURPRISES NEW YORK PAPER

Commenting on the gold production of the eastern states, the *New York Sun*, in its issue of July 19, says editorially:

"What often makes the Government publications entertaining is the surprises they contain. Who, for instance, knew that here in the eastern states were forty-five gold placer mines and thirty-six deep gold mines, that the yield from these mines was \$173,589 in 1914, and that this production was an increase over the preceding year. Yet that is the report in the current bulletin of the United States Geological Survey.

"North Carolina easily ranks first in the output of this valuable metal, more than 6,000 fine ounces, worth \$131,141. The largest of this state's placer mines is in the mountainous county of Rutherford, and the most profitable deep mines are along the Gadkin in Montgomery County. The production in Alabama was contributed by mines in fourteen counties, of which Lumpkin, one of the rugged northern counties, furnished the greatest output. Two eastern counties of Alabama, Talladega and Tallapoosa, furnished this state's largest and more valuable output.

"The Tennessee mines yielded more than \$6,000 worth of gold, less by \$1,000 than they did the year before. There was a decrease also in Virginia, and the output from Maryland was scarcely worth reporting. The Pennsylvania gold mines have not been worked for many years, and none of the New Hampshire mines reported any production last year.

"Some operators profess to see still greater possibilities in gold mining in the South Atlantic states and to believe that there will yet be uncovered a great wealth of the precious mineral in the mountains of Georgia or North Carolina. Whether these dreams of a new Eldorado come true or not, gold seekers find present mines, although their output is less than a hundredth of the production of California, profitable to work."

Oregon Uses Less Coal

Oregon in 1914, produced 51,558 tons of coal. This came from the only operating field in the State, which is known as the Coos Bay field.

Owing to the large production of petroleum in California, coal is becoming of less importance in Oregon, through the extensive use of oil fuel.

BUREAU OF MINES COOPERATIVE WORK WITH STATES PROVING SUCCESSFUL

California So Pleased with Results That Additional Men Probably Will Be Put on Work in That State—Utah Work is Benefiting Idaho and Colorado

Cooperation between the Bureau of Mines and the Industrial Accident Commission of California will be continued during the next fiscal year. This cooperation has been very successful during the past year and a half. The bureau furnishes a mining engineer to make investigations of safety and health conditions within the state. Half of the expense is paid by California. H. M. Wolfen is the engineer in charge of this work.

It is proposed to assign two additional engineers to this work, upon the same basis. California is impressed with the results that are being obtained, and is very willing to bear her share of the expense. The bureau also is gratified at the success of the cooperative work, but is hampered by lack of funds. It is probable, however, that means will be found whereby two additional engineers may enter the work.

TO GET UP SAFETY CODE

It is the intention to compile a safety code. Despite the fact that California was the first state in the Union to undertake mining on an extensive scale, this will be her first code of this kind. Later it is intended to get up a health code.

Cooperation also is taking place between the Bureau of Mines and the State of Illinois. Mining and safety problems peculiar to that State are being studied. A joint expenditure of \$20,000 is being made.

Investigation of the coking qualities of Illinois coal; the occurrence of gas in mines; mine ventilation; explosibility of Illinois coal dust and humidity of mine air are some of the questions under investigation.

The work is being directed by George S. Rice, representing the Bureau of Mines, Prof. A. A. stoock, University of Illinois, and Dr. F. G. DeWolf, State Geologist.

SUCCESSFUL IN UTAH

In Utah cooperation between the Bureau of Mines and the Utah School of Mines was very successful last year, and will be continued this year. D. A. Lyons is conducting an investigation into the possibility of utilizing low grade gold, silver, copper and zinc ores in Utah.

Owing to the similarity of these ores with those which occur in Colorado and Idaho, these states will benefit decidedly from this work.

In Pennsylvania a joint investigation is being conducted by the Bureau of Mines and the Bureau of Labor and Industry of that state. The study of the health of employees in blast furnace work will be continued. This investigation was begun a year ago.

The Missouri Geological Survey is cooperating with the Bureau of Mines in the matter of investigating milling losses in the treatment of zinc and lead. Sanitation and health features also are being given attention.

NEW MEXICO DEPOSITS OF ZINC ARE BEING STUDIED

G. F. Loughlin, of the Geological Survey, is in the Magdalena District of New Mexico, making a preliminary examination of the zinc deposits of that region.

WORK IS PROGRESSING ON IDAHO STATE REPORT

D. L. Jones has completed field work in the Connelly region of Washington and will join J. B. Umpleby in a reconnaissance of southwestern Idaho. Owybee, Elmore and Boise Counties in the Seven Devils and Warren Districts are to be studied thoroughly from a standpoint of geology and ore deposits. This work is being done to complete the report on the entire State of Idaho, which will be the subject of a general report such as the one recently published on New Mexico.

USE MICROSCOPE IN STUDY OF TONAPAH ORE SAMPLES

E. S. Bastin is conducting an extensive microscopic examination of Tonapah ore in San Francisco. He is being assisted by F. B. Laney.

FIELD MEETS INTEREST

Birmingham District has Twenty-eight Negro First Aid Teams.

Increasing interest is reported in the various parts of the country in first aid field meets. The greatest interest is being shown on the part of the employees.

The largest meet of this kind was held recently in Birmingham, Alabama, where eighty teams participated. Twenty-seven of the teams were composed of negroes.

This meet was held under the auspices of the Alabama Safety Association, Bureau of Mines, American Red Cross and the Alabama Coal and Metal Miners' Association.

UTAH'S MINERAL OUTPUT**FOR 1914 WAS \$37,151,593****Salt Lake County Has Greatly Increased
Output of Gold—Bingham Copper
Holds Up Well**

Mines in Utah produced ore and bullion during 1914 containing gold, silver, copper, lead, and zinc valued at \$37,151,593, as against \$44,858,210 in 1913, or a decrease of \$7,706,617, according to Victor C. Heikes, of the United States Geological Survey.

The gold output was valued at \$3,265,347, a decrease of \$299,882, or 8.41 per cent., compared with 1913. Salt Lake County was the largest producer and had a greatly increased output of gold valued at \$2,159,500, against \$1,777,214 in 1913. Most of the gold was from the copper ores in the West Mountain or Bingham district, in Salt Lake County, the yield amounting to \$2,151,520, or 65.89 per cent. of the total output. The Tintic district, in Juab and Utah Counties, ranked second with \$953,790, or 29.21 per cent. of the total; Summit County \$84,001 in 1914 and \$74,242 in 1913. Tooele County, which was once the leading producer in gold, dropped to \$16,468 in 1914.

SILVER SHOWS DECREASE

Silver from ores in Utah shows a decrease from 13,084,835 ounces in 1913 to 11,154,916 ounces, value \$6,168,669, in 1914, or 14.75 per cent. Juab County produced 4,444,996 ounces in 1914, against 5,600,617 ounces in 1913; and Utah County 264,532 ounces in 1914, against 265,850 ounces in 1913. Tintic district, comprising the larger part of the productive mineral area of these two counties, decreased from 5,829,484 ounces in 1913 to 4,666,944 ounces in 1914. Salt Lake County produced 2,629,153 ounces, against 2,504,021 ounces in 1913. The larger part of the 1914 production, or 2,383,051 ounces, was from the ores of the West Mountain or Bingham district. From the Park City region the yield in 1914 was 2,955,008 ounces, a decrease of 762,548 ounces, or about 20.51 per cent. from that of 1913.

From a record copper production of 161,445,962 pounds in 1913, the output decreased to 152,034,002, value \$20,220,522, pounds in 1914. The Bingham district led in production, with 141,924,811 pounds of copper, against 144,920,494 pounds in 1913, 116,621,793 pounds in 1912, and 129,995,865 pounds in 1911. The Tintic district yielded 5,290,471 pounds in 1914, against 9,261,867 pounds in 1913 and 13,339,126 pounds in 1912. The Park City region, in Summit and Wasatch Counties, produced 1,559,953 pounds in 1914, against 1,794,170 pounds in 1913 and 1,968,249 pounds in 1912. Beaver County yielded 1,511,888 pounds in 1914, against 3,137,234 pounds in 1913 and 3,040,400 pounds in 1912. There were three producers in 1914 classed as "porphyry coppers," which yielded 126,082,239 pounds of copper, against the same

number producing in 1913 when the yield was slightly greater or 126,364,491 pounds of copper, against 102,662,335 pounds in 1912.

LEAD INCREASES

The lead contained in Utah ores produced in 1914 was 171,323,137 pounds, value \$6,681,602, against 166,126,790 pounds in 1913 and 140,311,135 pounds in 1912. Of the 1914 output, 44.63 per cent. was derived from the mines in the Bingham district, which produced 76,453,128 pounds, against 71,001,138 pounds in 1913 and 43,822,495 pounds in 1912. The Park City region produced 32,323,066 pounds in 1914, against 41,808,713 pounds in 1913, or 18.87 per cent. of the total output. The Tintic district mines yielded 36,510,911 pounds in 1914, 26,279,312 pounds in 1913, and 24,356,041 pounds in 1912.

BEAVER COUNTY BREAKS RECORD

The zinc production of Utah (figures as spelter) aggregated 15,989,267 pounds in 1914, value \$815,453, against 18,857,827 pounds in 1913. Beaver County again eclipsed all previous records by yielding 7,143,746 pounds, against 5,522,324 pounds in 1913, and led all mining districts in 1914. Bingham district was second, yielding 4,121,977 pounds in 1914, against 3,421,724 pounds in 1913 and 2,711,982 pounds in 1912, and the mines in the Park City region yielded 3,173,313 pounds in 1914, against 4,980,206 pounds in 1913 and 8,001,512 pounds in 1912. Tooele County produced less zinc on account of the idleness of the Scranton mine. Mines in the Ophir, Rush Valley, and North Tintic districts yielded 752,097 pounds of spelter in 1914, against 1,202,568 pounds in 1913. In 1914 the larger part of the zinc was contained in sulphide ore, principally lead-zinc ore, which was concentrated. The smaller part was from zinc ore and lead zinc ore and was shipped directly to zinc smelters. The shipments of crude zinc ore and lead zinc ore resulted in 7,103,646 pounds of spelter and the concentrates produced 8,885,621 pounds.

PRODUCING MINES LESS

There were 204 producers of ore, against 210 producers in 1913. There were also 7 placers in 1914. The total quantity of ore sold or treated in 1914 was 8,544,014 short tons, against 10,202,566 tons in 1913. The average total recoverable value per ton was \$4.35 in 1914, against \$4.39 in 1913.

The output of "porphyry" copper ores aggregated 7,107,506 tons in 1914, against 8,406,816 tons in 1913. The quantity of siliceous ores treated by the cyanide process decreased from 74,815 tons in 1913 to 1,613 tons in 1914. Concentrating mills reduced 7,523,339 tons of ore to 500,458 tons of concentrates, which, with 910,308 tons of crude ore, were sent to smelters. Salt Lake County continues to produce the largest part, or 69.52 per cent., of the total output by value, chiefly from its copper, having furnished 93.50 per cent. of the total production of that metal and 91.45 per cent. of the total tonnage of ore treated.

OPPORTUNITIES ARE MANY FOR DEVELOPMENT OF SOUTHERN GOLD DEPOSITS

**Attitude of Owners of Land Discourages Newcomers and Makes Prospecting
Almost Impossible—South Carolina Company to Make Barium Chemicals
and Produce Ground Barites**

Information reaching the United States Geological Survey from southern placer districts tends to the belief that intelligent development of many of the low grade propositions in that section of the country will result profitably. Under present conditions, however, the chances for increased development are not great. Development work is hampered and prospecting is almost prohibited, due to the attitude of owners of the lands on which these gold deposits exist.

Reports just received from these placer districts indicate that very little work is being done in the Arbacoochee mines in Clayton County, Ala. The stream gravels have been worked out with the exception of the deep ground. Two attempts at dredging have been undertaken recently, but each failed. It is probable that 8 to 16 feet of dirt could be worked with hope of success, before reaching bed rock.

OPERATING ON SMALL SCALE

The placer mines at Dahlonga, Ga., are operating on a limited scale. The most active properties are at Little Findley and Crown Mountain. These are being worked under the direction of Charles Sumner.

Barlow Cut is the scene of some activity and some leasing has been done in the saprolite deposits east of Barlow Cut.

The dredge formerly working below the Calhoun dam, has been moved to new ground east of Briar Patch bridge. This work is under the direction of R. L. Herrick. The saprolite runs from 45 cents to \$1.00 per cubic yard, and is being mined hydraulically.

At Loud, in White County, work is being done on the gold deposits in a small way.

Most of the work in the South Mountains, in Burke, Rutherford and McDowell Counties, North Carolina, has been discontinued.

The old Mills property is still in operation. Miss Mary Mills is continuing this work at Brindle Creek.

At Sulter White Creek, some work is being done of the gold bearing gravel and on the old channel in Golden Valley. W. E. Ludlow is working there.

LOSE MARKET

Nothing is being done at present with the monazite and zircon sands. Demand for zircon seems to have ceased, while all thorium metal is being brought from Brazil.

Sinking is continuing in the gold mines in Montgomery County, North Carolina. The shaft is something over 350 feet deep. A new ten stamp mill has been erected. It is equipped with four amalgamating plates and two Wilfley tables.

At King's Creek, Cherokee County, South Carolina, barite deposits are being operated by the King's Creek Chemical Company. This company is producing ground barites and is reported to be preparing to make barium chemicals. Prospecting is being continued southwest of King's Mountain.

COLORADO'S GOLD OUTPUT IN

1914 WAS NEARLY \$20,000,000

The output of Colorado mines during 1914, according to figures compiled by Charles W. Henderson, of the United States Geological Survey, was \$19,883,105 in gold, 8,796,065 ounces of silver, 74,211,898 pounds of lead, 6,639,173 pounds of copper, and 96,774,954 pounds of zinc (in terms of spelter and zinc in zinc oxide), with a total value of \$33,460,126, compared with \$18,146,916 in gold, 9,325,255 ounces of silver, 87,897,773 pounds of lead, 7,227,826 pounds of copper, and 119,346,429 pounds of zinc, with a total value of \$35,450,585 in 1913. This shows an increase of \$1,736,189 in gold, and decreases of 529,190 ounces in silver, 13,685,875 pounds in lead, 588,653 pounds in copper, and 22,571,465 pounds in zinc. In addition to the decrease in quantities of silver and the base metals, the falling off in average value for these metals caused a decrease in value of \$768,230 for silver, \$973,238 for lead, and \$1,747,877 for zinc.

In 1914, there were sold or treated 2,677,526 short tons (mostly dry weight) of ore mined in Colorado, a decrease of 57,340 tons from the output of 1913. Of this total, 1,645,640 short tons (mostly dry weight) went to gold and silver mills, 363,743 tons (mostly dry weight) went to mills for concentration only, and 668,143 dry tons went crude to smelters; 188,770 dry tons of concentrates also went to smelters.

In all, 114,860 dry tons of zinc carbonate ore averaging 24.34 per cent. zinc, were sold at the mines in 1914, as compared with 137,240 tons of 27.5 per cent. zinc in 1913, and 136,705 tons of crude zinc and zinc-lead ore, concentrates, and middlings, averaging 25 per cent., were sold at the mines during 1914, as compared with 134,457 tons of 27 per cent. in 1913.

COAL PRODUCTION WILL BE

LESS THIS YEAR THAN IN 1914

From facts and figures in hand at Washington, it is very doubtful if the 1915 production of coal in the United States proper can equal the 1914 production. Owing to the bad start this year, it is probable that the exports, now rapidly increasing, will not overcome the decrease.

GOLD PRODUCTION IN ALASKA IS RUNNING CONSIDERABLY ABOVE AVERAGE

**Copper Properties Are Being Worked With Greatest Activity—Good Rainfall in June and July Made Extensive Sluicing Operations Possible—
Five-sixths of Precious Metal Comes From Small Operations**

Alaskan gold production during the six months ended June 30 promised to show a considerable increase over the same period of last year. There will be a very decided increase in the copper output, according to the belief of Government experts. Actual figures for the production of the first six months of 1915, of course, are not available, but estimates are made on the various reports which have been received.

A. H. Brooks, who is in charge of the Geological Survey's work in Alaska, has arrived in Alaska, and will visit Valdez, Fairbanks, Iditarod, and Ketchikan.

The actual output of gold for 1914 from Alaska just has been ascertained. It is practically the same as that of 1913. Since the first of the year, however, there has been much increased activity in the mining of copper and gold. This is especially true of copper. During 1914 a large number of the copper properties closed owing to the low price of the red metal.

COPPER MINES ACTIVE

This all has been changed by the rapid increase in the price of copper. All producing mines are straining every effort to increase their shipments, fearing a decrease of price, if peace should be declared.

In the production of gold, the development has proceeded steadily but during 1915 a number of lode propositions have reached the shipping stage. A few more dredges have been installed. April and May were good months for sluicing.

In Alaska there are 700 placer mines. Five-sixths of these are comparatively small operations. These properties are affected very decidedly by the amount of water available for sluicing. If the season is unusually dry, a decided reduction in gold production results from their inability to secure water.

RAIN HEAVIEST IN AUGUST

The most important portion of the 1915 season, of course, is during June, July and August. During June and July the normal rain fall is small, but reports from Alaska indicate that the rain fall has been more copious than usual. In August there usually is a heavy rain fall—in fact, the heaviest of the year invariably takes place during this

month. For these reasons, it is expected that the 1915 production of gold in Alaska will be considerably in excess of the 1914 production.

One of the most interesting mining districts is the Koyukuk, a placer region which is north to the Arctic Circle. It has been in operation for seventeen years, but continues to produce profitably, despite the high cost of transportation and operation. No outside capital is being employed in this district. It is being operated in the old-fashioned way.

FIND LARGE NUGGET

One of the largest nuggets found in Alaska recently was discovered in the Koyukuk District. It weighs 137 ounces, and is valued at \$1,800. The largest nugget ever found in Alaska was worth \$3,000. It was discovered twelve years ago at Nome.

Miners in the Fairbanks District are rejoicing over the certainty of rail transportation. For the past several years, operations have been handicapped greatly in this region, due to the high cost of fuel, and the serious delays in getting supplies. In the early days before the richer deposits were worked out, it was possible to stand the high cost and still make a profit. This day has passed in Fairbanks, and it will be necessary in the future to rely upon the low-grade deposits for gold production.

BUREAU OF MINES MOVING PICTURES EXCITE WIDESPREAD INTEREST

Miners throughout the West Virginia and Pennsylvania fields, which have been traversed by the Bureau of Mines car carrying a moving pictures machine, have shown the greatest interest in the instructive films shown. The pictures deal with subjects showing the need for greater safety in mining. Features as to fire prevention, first aid, and mine rescue work also are brought out.

COMPLETES REPORT ON SANTA RITA, N. MEX. QUADRANGLE

A detailed report on the geology and ore occurrence in the Santa Rita quadrangle of New Mexico, just has been completed by A. C. Spencer, of the Geological Survey. The report cannot be published within a year.

ARIZONA BILL PROVIDES FOR ESTABLISHMENT OF STATE HOSPITAL FOR MINERS

Department of Labor Also Provided to Work in Interest of Wage Earners—Statistics and General Information Will be Collected and Classified

Arizona

A bill providing for the establishment of a state hospital for disabled miners recently passed the House of Representatives. The bill provides for a commission to select the site of the hospital and for a board of trustees who shall conduct it.

The bill provides \$75,000 for the purchase of the site and erection of such buildings as may be deemed essential. It is made lawful for the trustees of the hospital to receive contributions, donations or bequests from any person, firm or corporation, to aid in the support, maintenance or improvements of the hospital.

MUST HAVE OCCUPATIONAL DISEASE

To be eligible to become a free inmate of the miner's hospital, it is necessary for the applicant to be suffering from occupational diseases peculiar to the mining industry, contracted while employed in the industry in Arizona.

It is provided that to be eligible for attention without charge applicant must be a citizen of the United States. The applicant must not have real or personal property in excess of \$1,000.

Any person injured in Arizona mines, so as to require surgical and medical treatment, may be admitted to the miner's hospital. Employers receiving fees from their men to cover accident expenses must make payment for each of their employees treated in the state institution. It is lawful for an employer to collect a hospital fee, which does not exceed $1\frac{1}{4}$ per cent. of the salary of the employee. No fee may be collected without the consent of the employee. In case the employee refuses to have this reduction made from his wage, he is not eligible for free admission to the hospital. Burials will be made from the hospital at state expense where inmates are not provided with means.

MAY BRING SUIT

In the event of any miner receiving injuries which make him eligible to the hospital, and at the same time give him a legitimate claim for damages, the trustees may cause suit to be brought in order to secure for the inmate the damages due him. From this award all expenses of litigation and treatment are to be deducted.

Upon a petition signed by 25 per cent. of the miners in Arizona, requesting the removal of one or more of the trustees, the governor shall arrange hearings. The governor is empowered to remove the trustees for cause.

New Land Code

Arizona's new public land code contains points of interest to mining. Extracts from it are as follows:

RESERVATION OF OILS

Leases shall expressly except and reserve to the State all oils, gases, coal, ores, minerals, fertilizer and fossils of every name, kind and description which may be in or upon the land, and any legal claim or claims existing or that may be established under the mineral land laws of the United States, or the State of Arizona, and shall reserve to the State and its agents or assigns the right to go upon the land for the purpose of extracting therefrom or prospecting for such oils, coal, ores, minerals, fertilizer or fossils, and shall further reserve the right to relinquish to the United States such lands as may be needed for irrigation works, in connection with any Government reclamation project, and to grant or dispose of rights of way and site for canals, reservoirs, dams, power or irrigating plants, or works, railroads, tramways, transmission lines or any other purpose or use on or over such land.

LEASES AND CONTRACTS

The department is authorized to execute leases and contracts for the leasing of lands containing gold, silver, copper, lead or other valuable minerals, or for any land containing shale, slate, petroleum, natural gas, or other valuable natural deposits which the State now owns or to which it may hereafter acquire title.

Any citizen of the United States finding valuable minerals upon any unsold lands of the State may apply to the department for a lease of any amount of land not to exceed the amount and dimensions allowed by the mining laws of the State and the United States.

The manner of locating a mineral claim upon State land shall be in accordance with the law of the State regulating the location of mineral claims on Government lands; provided, that any citizen or citizens who may have found minerals or unsold State lands previous to the passage of this act and posted notices in accordance with the mining laws of the State, and the United States, shall have preference right to lease the same, and shall have ninety days after the passage of this act in which to make application to the department for such lease.

PROVISIONS OF LEASE

For the purpose of developing such mine or mines, the applicant shall, upon the payment of \$3 per claim, receive from the department a lease for two years; provided, however, that no more than 50 tons of ore shall be

removed from the premises for any purposes until a contract shall have been executed, as hereinafter provided.

The lessee may cut and use the timber found upon said claim for fuel, and in the construction of buildings required in the operation of any mine or mines, on the claim; also the timber necessary for drains, tramways, and supports for such mine or mines, but for no other purpose.

Any time prior to the expiration of said lease, the lease-holder or any assignee thereof shall have the right to obtain from said department a contract, which shall bind the State of Arizona, as a part of the first part, and the person, or persons, or corporation, to whom said contract shall issue as part of the second part, in a mutual observance of such obligations, terms, and conditions as may be agreed upon by said department and the said lessee.

PENALTIES

Whenever any lessee of mining property shall be convicted of fraud or wilful misrepresentation in connection with the procuring of any such lease, or the handling or shipping of ores or other dealing with the product or proceeds of any property leased under the provisions of this act, the penalty shall be the forfeiture of the lease to any such mine or mining claim, and all improvements placed thereon, or used in connection therewith, and all property pertaining thereto and all moneys paid thereon and all rights, title or claim to any and all of said property shall be vested in the State without further or other procedure on the part of the State.

TAXATION OF IMPROVEMENTS

All improvements placed upon State lands shall, until they become the property of the State, be subject to assessment for taxes, in the name of the owner, the same as other property.

ASSIGNMENTS OF LEASE

Any lessee of State lands not in default as to any rent, and who has kept and performed all the conditions of his lease, may, only with the written consent of the commissioner, assign his right, title and interest under such lease.

Department of Labor

House Bill 16, by John J. Sweeney. This bill provides for the creation of a department of labor, prescribing the duties, powers, qualifications and wages of the commissioner of labor and employees of his department.

It provides for a board of arbitration to act in conjunction with the commissioner of labor in certain instances.

The first commissioner of labor is to be appointed by the Governor, with the consent of the Senate. He shall hold office until a successor shall have been selected at the next general election. The term of office is two years.

The commissioner of labor must be a qualified elector of the State and must have been a resident for five years prior to election. He must have been engaged in some of the trades or industrial pursuits for a period of not less than five years preceding his election.

The commissioner of labor is to receive a salary of \$3,000 per year, and \$2,000 for traveling and other expenses.

A deputy is to be appointed, possessing the same qualifications as the commissioner. He must be a stenographer, and is to receive \$1,500 per year.

The commissioner must file a bond of \$5,000 and the deputy commissioner a bond of \$2,500.

TO GATHER STATISTICS

Statistical details relating to all departments of labor and industrial endeavor in the State are to be collected and published annually, by the commissioner. These statistics must contain, among other things, hours and wages of labor; estimated number of persons, male and female, depending upon daily labor for their support; cost of living; unemployment; operation of labor-saving machinery; production and accidents.

The commissioner of labor is empowered to enter any factory, mine smelter or other place in which work is conducted.

To impede the commissioner in the discharge of his duties is penalized by a fine of \$250, six months' imprisonment, or both.

MAY SUMMON WITNESSES

The commissioner has the power to compel attendance before him for examination under oath. He is instructed to make immediate investigation of all labor disputes. He is to act as first arbitrator in strikes.

A board of arbitration, consisting of the commissioner and two men, is provided for service in times of labor controversies. One of the men is to be an employee in good standing with a labor organization. The other is to be selected by the employer. The commissioner is to be chairman of this board. Recommendations must be submitted fifteen days after the completion of the hearing.

An appropriation of \$5,500 is provided annually to carry out the provisions of the act.

Takes Semi-Vacation

H. D. McCaskey, chief of the mineral resources division of the Geological Survey, spent a portion of July at Wallops Island Club House, at Chincoteague, Virginia. Mr. McCaskey did not feel he could spare the time to take a vacation outright, so he is working upon a quicksilver report while away.

Distills Oil Shale

Field distillation tests of oil shales in northwest Colorado and southwest Wyoming, are progressing nicely, D. E. Winchester reports.

PROSPECTS FOR AMERICAN TIN BRIGHTEN AS WAR IS PROLONGED

Another Effort to Operate South Dakota Deposits is Being Made—English Smelter to be Erected in U. S. to Treat Bolivian Ore—Alaskan Properties Look Up.

Another effort to operate the tin mines west of Hill City, South Dakota, is being made. Henry Kammal has taken over the property and is engaged in development work. He also is building a new mill out of the material in the old mill erected a number of years ago.

The first effort to operate these mines was a spectacular failure. It is said to have been due to over-capitalization, and the establishment of a large plant when very little ore had been developed in the mines.

Mr. Kammal expects to operate the property on a very small scale, and is very sanguine of securing profitable results. Government geologists have made examinations of this district. There is no question that tin exists in considerable quantities. The extent of the deposits, however, is a matter of conjecture, as little exploration work has been done.

Tin, as a result of the war in Europe, just now is attracting much attention. It is known that important English smelting interests have decided upon the erection of a tin smelter in this country, which will handle Bolivian barilla. This fact alone has done much to stimulate tin mining in this hemisphere. The South Dakota deposits are the only ones of known commercial importance in the United States proper.

In Alaska, tin is being produced at Buck Creek, 120 miles northwest of Nome. A dredge is working on gold and tin near York, Alaska. Miners are getting tin with their gold on Sullivan's Creek, Tofty Gulch and Hot Springs, near the Tanana River, northeast of Fairbanks. Much development is expected on these Alaskan properties as the result of increased demand for tin.

Information recently received by the Geological Survey, is to the effect that the Bolivian tin deposits are capable of immense development. The supply of tin in the South American Republic only has been scratched, it is declared.

An interesting fact in connection with tin development in Bolivia, is the fact that Simon Batiño, who controls large mines, has an income larger than the Bolivian Government.

Although the United States consumes about 40 per cent. of the world's tin output, it produces an insignificant quantity and smelts practically none. On the other hand, Great Britain controls about three-fourth of the tin output of the world and a somewhat larger percentage of the smelted tin. On account of the war Great Britain has placed restrictions on the export of tin which have given American Manufacturers trouble in getting needed supplies.

The Bolivian ore, which has hitherto been shipped to Europe for reduction has comprised the largest quantity of ore free from British governmental domination and towards securing this ore efforts have been directed. It will be remembered that a few years ago a tin smelter to operate on ore from the Malay Peninsula was erected at Bayonne, N. J., but the British Government placed a heavy export duty on tin ores and the smelter was converted to other purposes.

Four tin smelters are understood to be in operation at Cornwall, England, and it is reported that another has been started at Liverpool, although of this the Survey has no direct knowledge. These smelters handle tin ores from all parts of the world. The British control about three-fourths of the world's tin production and a larger proportion of its tin smelting capacity, though only a small part of the ores are produced in England. The English ore all comes from Cornwall and in 1914 the Cornish ore contained about 4,000 long tons of tin.

The tin of the Malay Peninsula is mostly smelted in two smelters, one of which is at Perak and the other at Singapore. These smelters also handle ores from Burma, Siam, and Austria. A part of the Alaskan ore is shipped to Singapore for smelting.

Australian ores, including Tasmanian, are in part smelted in Australia and in England. The Bolivian ores, containing in 1913 nearly 28,000 long tons and in 1914 nearly 22,000 long tons of tin, are shipped to England and Germany for smelting. Previous to the war, a large part of the Bolivian ore was smelted near Hamburg, Germany, by the firm of Robertson & Bense.

The ores mined in Banca and Billiton, about 15,000 long tons of tin per year, are smelted and controlled by the Dutch. A certain quantity of tin is produced and smelted in the province of Yunnan, China. A little is also produced in southeastern China. Figures on this output vary from a few hundred tons to a few thousand tons for 1913; no later figures are available.

As given by Quin's Metal Hand Book, 1915, Great Britain's imports in 1914 amounted to 32,398 tons of tin ore. Germany imported in 1913, 18,186 long tons of tin ore. These ores can probably be conservatively estimated to carry somewhat more than 60 per cent. of tin. Of the ores which go to Great Britain, Nigeria produced in 1914 about 4,714 long tons of tin and the Transvaal in 1913, 2,276 long tons of tin.

VAN H. MANNING REGARDED AS LIKELY BUREAU HEAD

Others are Mentioned as Possible Successors of Dr. Holmes—Secretary Lane Has Made no Recommendations as Yet

Speculation is rife as to whom will be chosen as director of the Bureau of Mines. The Secretary of the Interior has made no recommendation to the President as yet. It was stated at his office that he had formed no conclusion as to the man who should have the place.

Mr. Lane attaches the greatest importance to the directorship of the Bureau of Mines and it may be several weeks before he finishes weighing the merits of those who are eligible for the position.

Van H. Manning, the acting director, who has been assistant director since the foundation of the Bureau, is regarded as the most probable man for the appointment.

Mr. Lane is thoroughly familiar with his qualifications and it is expected that he will be most likely to recommend a man of whose abilities he has a personal knowledge.

Several men are being mentioned in the general discussion of those qualified to fill the place. Dr. Chas. L. Parsons, in charge of mineral technology at the bureau, doubtless possesses splendid qualifications for the place, but probably would not accept it if named as it would mean the relinquishment of his radium research. George S. Rice, chief engineer of the bureau, is being urged in some quarters. W. C. Mendenhall, head of the Land Classification Board of the Geological Survey, is another whose name is heard in connection with the discussion of those qualified for the place.

There is the bare possibility that the Secretary may consider the suggestion that an outside mining engineer be recommended.

Several newspapers jumped to the conclusion that James F. Callbreath, Secretary of the American Mining Congress, would be a candidate for the directorship. The unauthorized publication of this article led to the following letter from Mr. Callbreath to Secretary Lane:

"Upon my return this morning from an extended Western trip, I find that it has been announced that the writer is a candidate for appointment as director of the Bureau of Mines.

"In view of the many inquiries as to the attitude of the American Mining Congress concerning this appointment, will you permit me to say that I am not a candidate and that the American Mining Congress has and will have no candidate for this position?

"The active interest of this organization in the establishment of the Bureau of Mines and our special interest in its success justify a sincere desire that the man who is selected shall be thoroughly equipped for the work, familiar with the needs of the various branches of the mining industry, and able to carry on the most efficient work which has been accomplished under the direction of the late Dr. Holmes,

whose death is a matter of sincere regret to all those who have the welfare of the mining industry at heart.

"I feel sure that our directors will feel complete confidence that your recommendation for appointment will be such as to meet fully the comprehensive and delicate requirements of the position."

The following letter was received in reply:

The Secretary of the Interior,
Washington,
July 24, 1915

Dear Mr. Callbreath:

I have your letter of today, and appreciate very much the attitude of the American Mining Congress in the matter of the selection of a successor to Dr. Holmes.

Cordially yours,
(Signed) FRANKLIN K. LANE.

Mr. J. F. Callbreath, *Secretary*,
The American Mining Congress,
Washington, D. C.

SULPHURIC ACID MAKERS WANT CHEAPER SULPHUR

Declare American Product Can Be Sold So As To Replace Entirely Foreign Pyrite

Scarcity of ocean bottoms has restricted imports of pyrite from Rio Tinto mines of Spain. The demand for this important product is greater than ever before. This is caused by the abnormal demand for fuming sulphuric acid used in making explosives.

It is stated that American manufacturers of sulphuric acid prefer using sulphur instead of pyrite. With sulphur held at \$20 per ton, it is impossible to use it extensively in manufacturing the acid. If sulphur could be obtained for \$15 per ton, it would supplant foreign pyrite entirely, it is stated.

Sulphur is being mined greatly in excess of consumption. At least one American property is storing sulphur in great quantities. That it could be sold for \$15 per ton, and still allow a fair margin of profit, is claimed by some. Hope is entertained on the part of manufacturers of sulphuric acid that the increasing production of sulphur from Texas fields, may reduce the price of the element, which has been arbitrarily fixed for many years.

Reports on Chromic Iron

The production of chromic iron ore in 1914 is the subject of a report which has just been printed by the Geological Survey.

SLIMES MADE MORE WORKABLE, INVENTOR FROM SAN FRANCISCO CLAIMS

Uses Soap Water Over and Over Again in Improved Flotation Process—London
Man Patents Parts for Ore Roasting and Drying Furnace—Frank
Sessions, of Columbus, Gets New Patent

Patents of interest to mine operators have been granted as follows during the past month: Ore Concentration, No. 1,142,822. This invention is by John W. Littleford, of San Francisco, California, and relates to improvements in separating valuable mineral from ore slimes. Its object is to render slimes more amenable to the separation of valuable mineral.

Mr. Littleford claims that if fine slimes in the ore pulp can be coagulated or brought into a flocculent condition, they do not exert so great a retarding effect in the settlement of the valuable mineral, and that it can be recovered more readily on concentrating tables or otherwise.

The silicious or gangue slimes are coagulated or gelatinized or both by adding to or mixing with the ore pulp a small amount of saponaceous material or soap, either in the form of an emulsion or otherwise. The small proportion of soap or soap emulsion is added to or mixed with the pulp, and the mass stirred to bring the soap particles in contact with all portions of the slimes, and the slimes quickly coagulate or become flocculent and settle with comparative rapidity. The water containing the soap is not impoverished and may be used over again, thus reducing the cost of the process. A very small quantity of the soap or emulsion in proportion to the slimes is sufficient to produce the desired coagulation.

USES PART OF FURNACE

Ore Roasting or Drying Furnace, No. 1,143,438. This invention is by Harry Mackenzie Ridge, of London, England, and relates to multiple hearth furnaces for roasting or drying crushed or finely divided ores, concentrates, slimes or the like, wherein the ore is rabbled and caused to traverse the several hearths in succession by the operation of a series of rabble arms, carried by a number of suitably spaced vertical shafts, which extend downward or upward through the several tiers of hearths.

The primary object of the invention is so to construct such a furnace that part can be put out of operation for the purpose of renewals and repairs, without shutting down the entire furnace.

The rabbles, feed holes, and the discharge holes from the various hearths are arranged so that in normal working, when the entire furnace is in operation, the ore traverses the entire length of each hearth. Should it be desired to cut out part of the furnace, the rabble shafts of that part are stopped and the ore, by the opening or closing of one or more inlets or discharge outlets, by the action of the rabble arms, will traverse

in succession the several hearths of the other part of the furnace.

IMPROVES ORE CRUSHER

Stone Crushing Machine. No. 1,141,581. This machine is invented by Ture Gustaf Rennerfelt, of Stockholm, Sweden. It relates to improvements in a machine for crushing stones, ore, clinkers and similar material.

The primary object of the invention is to create a machine of high mechanical efficiency which shall be reliable in operation and require a comparatively small amount of driving power. In this machine bearings are not liable to heat, and no delicate part shall be broken in case of overload. It has the advantage of being shorter in length than the ordinary stone cutter, and, by reason of higher efficiency, requires a flywheel of comparatively small weight. These advantages are of special importance since the machine must be transported frequently over rough country roads.

Instead of using toggle joints and eccentric with small eccentric radius, the machine comprise an unequal armed lever and roller, together with means for swinging the lever back and forth. The lever is fulcrumed in the frame, and the roller placed so that it can roll back and forth between the free end of the jaw and the shorter arm of the lever.

ELIMINATES FEEDING APPARATUS

Mining Machine. No. 1,143,144. This invention is by Frank L. Sessions, of Columbus, Ohio. Its object, generally stated, is to provide a machine having improved means for driving the cutters, for feeding the cutters against the coal, and for controlling the feed of the cutters. The machine not only effects the automatic feed of the carriage, but also automatically controls the feed according to the character of the coal or other substances which the cutters engage. It disposes entirely with all of the ordinary feeding apparatus, such as racks and pinions, shafting and gearing ordinarily used.

USES RESIDUE ALSO

Separation of Mixed Sulphide Ores. No. 1,142,821. This invention is by Henry Lavers, of England, and relates to improvements in ore concentration. Its object is the separation of various metallic sulphides from each other by means of flotation separation. (This includes concentrates, tailings, slimes or other products containing mixed metallic sulphides.)

An interesting feature of this invention is that if the finely pulverized ore containing mixed sulphides is suspended in slightly alkaline water, is subjected to the agitation-froth process with

the use of a suitable frothing agent, a flotation product can be obtained containing the bulk of the metallic sulphides which are thus separated from the gangue. If the concentrates are then re-treated by the agitation-froth process (still in alkaline circuit) and with the addition of a salt chromium, it is possible to obtain a flotation product relatively high in certain sulphides on the one hand and a residue relatively high in other sulphides, on the other hand.

The following is an example of the application of the invention:

An ore containing 9.0 per cent. of lead, 28.2 per cent. of zinc and 14.2 per cent of iron was crushed very finely and then subjected to froth flotation treatment in apparatus of well-known type by being vigorously agitated with four times its weight of water at 130° F. containing solution of sodium carbonate amounting to 22 pounds per ton of ore, sodium bichromate amounting to 6 pounds per ton of ore, eucalyptus oil amounting to about one-half pound per ton of ore. The flotation product obtained from this operation consisted of a concentrate containing 50.1 per cent. of zinc, 4.25 per cent. of lead and 8.3 per cent. of iron, while the bulk of the iron and lead were left in the residue.

CLEAN DISKS EASILY

Ore Grinder. No. 1,144,305. This invention is by Edward F. McCool, of Victor, Colorado, and relates to ore grinders specially adapted for use in grinding ore for samples. Mr. McCool claims that this invention makes it possible to clean thoroughly the disks so that the quality of ore ground at one operation will not in any way affect the quality of the next charge.

In part the grinder is described as follows:

"The grinding function is performed by two disks, to which the ore to be ground is fed through a hopper, carried by one of the disks, the last-named disk being comparatively stationary, but mounted, to permit, to a limited extent, a rocking action to compensate for any unevenness. The operating shaft is mounted eccentrically within another shaft. To one extremity of the operating shaft is secured a head grooved to receive the tongue of a rotary disk, which cooperates with the first named disk, to perform the grinding function. Power is transmitted, initially to the hollow shaft upon which a fast pulley is mounted. This shaft carries a crank arm upon the outer extremity of which is mounted a pinion, which meshes with a larger gear on the operating shaft. Provision is further made for swinging the grinding head away from the rotary grinding member, which gives opportunity for thorough cleaning."

SEPARATES ZINC

Zinc-smelting Furnace. No. 1,444,036. This invention is by James M. Hyde, of Berkeley, California, and relates to smelting metal bearing materials containing zinc or any other volatilizable metal or metallic compound and especially the class of ores containing zinc and other metals such as lead, copper, gold and silver.

Its object is to furnish a machine in which the ore and reducing agent may be mechanically fed into the smelting chamber. It also enables the material removed from the volatilizable

metal, to be withdrawn from the smelting chamber during the smelting operation. This is accomplished by means of a conduit or opening. In removing the metal by this means, the machine effectively prevents efflux of volatilized metal, influx of air, or products of combustion into the smelting chamber or retort. The removal of the volatilized metal from the retort and its condensation is provided for by an externally opening aperture from the retort and a condensing device attached thereto.

IMPROVES COAL CUTTER

Electric Motor-driven Coal Cutter. No. 1,145,331. This invention is by Robert Martin, of Irvington, New Jersey. It relates to improvements in mining machinery, and particularly to electric coal cutters.

The object of the invention is to provide a machine, with a pick carrying rod, an armature rigidly secured to the rod, means for reciprocating the rod and armature, and electro-magnet and electro-responsive means for automatically operating the magnet, in order to disconnect the magnet from the armature, which is secured to the pick carrying rod to enable the pick carrying rod to deliver the blow through its own momentum, and at a time when the rod is disconnected from the means which reciprocate. It also provides the armature holder and magnet with suitable air-cushioning means.

KEEPS RAIL ENDS RIGID

Rail-Joint. No. 1,145,321. This invention is by John M. Langford, of Leesville, South Carolina, which relates to improved means for connecting and supporting the meeting ends of two rails.

This invention provides a novel and practical construction of angle bars, which include depending side members in the form of a saddle or yoke and the meeting ends of the rails so that the joint is effectively reinforced and danger of sinking of the rail ends is reduced greatly, if not entirely overcome.

It also provides a means for retaining the wedge member against longitudinal movement with relation to the saddles or yokes, to prevent the outward spreading of the saddles, and also adjusts the height of the member that it will firmly engage with the rails, locking keys being provided for the adjusting means which contact with the longitudinal edges of the rails. The block is held at its top and bottom against movement.

SIMPLIFIES COMPASS READING

Azimuth-Compass. No. 1,145,056. This invention is by John F. Cole, of Somerville, Mass., and has for its general object, the providing of a compass having simple construction in which the reading can be made by the observer while his eye is on a distant object, without the necessity of employing either a telescope or a narrow slit with a hair line (commonly called a sight vane) for sighting distant objects.

This object is obtained by using means associated with the compass by which the virtual image of the lubber-line and the adjacent portion of the compass card are projected in a direction

parallel to the horizon. This enables the observer to direct his vision toward the distant object by holding the instrument between himself and the object, with the lubber line in the general vertical plane of the object, so that the image of the lubber line and the adjacent portion of the compass card will appear to the observer directly in his line of vision.

LOADS COAL IN CARS

Mining Machine. No. 1,143,897. This invention is by Jefferson E. Flexner and Edward O'Toole, of Gary, West Virginia. It relates to the class of machines used in mining coal, and particularly to the construction and arrangement of cutter heads used on coal cutting machines.

One object of the invention is to provide a mining machine having a rotary cutter head mounted thereon constructed and arranged to remove the coal brought into contact with the cutters or picks and to cut the clearance necessary to admit the constantly advancing machine in removing the coal from the vein.

It is also claimed that this invention provides a rotating cutter head, mounted on the mining machine, to oscillate or rock while rotating, in operating on the coal vein so as to cut the clearance necessary to accommodate the coal mining machine and its driving mechanism in the forward movement during operation of the machine.

It provides also for a machine having improved means for mechanically removing the coal as mined into mine cars, or into position to be placed in mine cars.

SEPARATES IRON CONTENT

Process for the recovery of metals from ores and the like. No. 1,144,402. This invention is by Charles S. Vadner, of Salt Lake City, Utah.

Among other things Mr. Vadner claims for his discovery that it will recover, at a financial profit, copper, silver, and zinc from iron, purchased either as high grade iron ore, or as "scrap." It also will recover from low-grade copper ores, the iron therein contained, and any gold or silver which it may contain.

CALIFORNIA ALL BUT LOSES FIRST PLACE AS OIL PRODUCER

More petroleum was produced in 1914 than ever before in the United States. The total amount of petroleum recovered during the year amounted to 290,312,535 barrels. Oklahoma, as a result of the enormous production of the Cushing Pool, all but wrested first place from California. Wyoming showed the greatest relative increase. Its 1914 production exceeded that of the previous year, 48 per cent.

Want Canadian Spelter Favored

The suggestion was made in the House of Commons by Sir Edward Cornwall that in the event of purchases of spelter being made in America there should be discrimination in favor of metal made in the United States from ores produced in British Columbia. The ministry of munitions promised to consider the suggestion.

FIELD WORK IS IN PROGRESS IN MANY MINING AREAS

Below are the quadrangles containing mining areas, on which Geological Survey field work is now in progress. The names of the party chiefs also are given:

State	Quadrangle	Party Chief
California,	New Almaden,	E. P. Davis;
	Preston,	J. P. Harrison.
Colorado,	Naturita,	C. L. Nelson.
Idaho-	St. Regis,	J. E. Blackburn;
Montana,	Salmon and	
	vicinity,	T. M. Bannon;
	Mackay,	T. M. Bannon.
Montana,	Drummond,	K. W. Trimble.
Nevada,	Pioche District,	H. H. Hodgeson.
New Mexico,	SE. $\frac{1}{4}$ Koehler,	R. W. Berry.
Utah,	Mercur,	A. T. Fowler.

It is planned to take up work on the following areas later in the season:

State	Quadrangle
Arizona,	Chiricahua.
California-Nevada,	Yellow Pine Mining District.
Texas,	Electra-Burnet-Beaver Creek Oil Field.

Beginning in this issue, decisions of the Department of the Interior with respect to mineral land cases will be printed in the JOURNAL. These cases are handled by the General Land Office, after which they are considered by the Secretary of the Interior, from whose office the final decision is issued. Attention is called to the far-reaching importance of the two cases reviewed in this issue. The principles applied here cover a large number of mineral cases throughout the west.

DEATH-RATE SHOWS DECIDED DECREASE IN INDIANA MINES

Indiana coal mines produced 16,641,132 tons of coal, values at \$18,290,928,000, during 1914. This is a slight decrease over 1914. The production of machine mined coal amounted to 56 per cent. of the total. During the year there were forty-four fatal accidents in the State. The death-rate was 1.97 per thousand, in 1914, as against 2.97 in 1913.

INCREASING PRICE DRAWS ATTENTION TO QUICKSILVER

Rapid increase in the price of quick silver is resulting in additional interest being paid this metal in the mining districts where it is known to occur. Special activity is reported by the Geological Survey in Nevada. The deposits in the Pilot mountains, east of Mina, and in prospects at Beatty, Nevada, are attracting special attention. The Nevada deposits are discussed in a report recently made by Adolph Knopf.

THE MINING CONGRESS JOURNAL

PUBLISHED EACH MONTH BY
THE AMERICAN MINING CONGRESS.
Munsey Building. Washington, D. C.

Subscription Rate, per year..... \$2.00
Single Copies..... .20

Entered as Second Class Matter January 30, 1915,
at the Postoffice at Washington, D. C.

AUGUST, 1915

EDITORIALS

RESPONSIBILITY OF SERVICE; MR. BRYAN'S EXAMPLE

The recent meteoric descent of Mr. William J. Bryan was more seeming than real. Real to the many friends and admirers of his past, but seeming, to those who had more closely analyzed the causes of his resignation from President Wilson's Cabinet.

We have before felt called upon to criticize those who do not recognize the responsibility of service, the duty to render honest service for the compensation received.

This responsibility is the same, whether in a job or a position; whether the compensation to be paid is a bare living wage or a princely salary.

A theory is sometimes advanced that if the majority shall perform its best service, no work would remain to be done by the minority, and, in consequence, a duty is implied to so rob the employer as to provide work for all.

It is hard to imagine a condition under which this theory can be justified. In practice the people of the world always absorb as many of the luxuries as their

buying ability will permit. Many articles which at first seem to be luxuries in a short time become practical necessities, and a continuous demand for productive labor is created.

INCREASES WAGES

This process not only increases the demand for labor, but also increases the wages which can be paid. In the production of life necessities the wages paid must be measured by the purchasing ability of all the people; in the production of luxuries the wages paid come from a more elastic fund, which can increase labor's portion without burdening unduly the consumer.

There is, however, an underlying principle of much greater importance. The duty to earn the wages to be paid should be just as sacred as the obligation to pay the wages agreed upon.

What is the measure of that obligation? Is it to render just enough service to insure the collection of the wage? Or is it to render the best service which the individual is able to perform during the hours agreed upon?

CONSUMER BENEFITS

If full service is rendered, both physical and intellectual, the higher efficiency thus effected gives the product to the consuming public at the least cost of production, increases the use of the article because of its cheapness and increases the number of those whose service is required in the particular industry.

If the least service possible is to be performed, then follows increased cost of production, increased cost to the consumer, and a decrease in the amount consumed and a decreased demand upon labor.

After all, the wages paid for productive service must be measured by the purchasing power of the consumer. This rule may not apply to service rendered the Government, but the principle of honesty in service is equally important.

Mr. Bryan did not go unrebuked for keeping his lecture engagements while a member of the cabinet, but the criticisms were largely leveled at the statement of the "Great Commoner" that he could

not meet his obligations on the salary of \$12,500.

DUTIES OF OFFICER

The vital question was whether, the administration having employed him as Secretary of State, he was entitled to the benefit of his "full time, energy and ability," or whether his employment was a matter of personal aggrandisement—whether public office is a public trust or a private graft.

This is said not in criticism of Mr. Bryan personally, but of a method of thinking so dangerously prevalent that even Mr. Bryan, with his high ideals, could even unconsciously become a victim of its insidious influence, and so prevalent that this exhibition in high place called forth no general public disapproval.

If it is true that virtue brings its own reward, it must be conversely true that a lack of virtue should bring its own punishment.

NEGLECTED HIS DUTY

Mr. Bryan's experience seems to demonstrate the truth of this theory. As Secretary of State, he neglected his duty. President Wilson needed the advice of the Department of State. Mr. Bryan was absent. The President necessarily consulted some one else in the Department. Having considered a particular matter with another than the Secretary, what more natural than that after Mr. Bryan's return the President should continue to confer with the same official? Why waste time to go over again the details of a situation with Mr. Bryan when another thoroughly conversant with the subject was available? President Wilson must either waste time to which the nation, his employer, was entitled, or ignore the Secretary of State. The President, respecting the principle of honesty of service, chose the latter course. The Secretary was ignored; the situation was intolerable; Mr. Bryan sought excuse to escape with dignity. The first note to Germany was so emphatic that a denial of its requirements must call for more emphatic action. The denial was probable and thus a dignified opportunity for resignation would be created. The denial came,

but President Wilson, accurately sensing the attitude of the American people, replied calmly to the German note, and failed to create the anticipated excuse for resignation. The situation became so intolerable that it could be endured no longer. The resignation followed, but the excuse for it failed completely. Mr. Bryan became a victim of his own failure to recognize the responsibility of service.

DEATH OF DR. HOLMES

CAUSES MANY TO GRIEVE

Dr. Joseph A. Holmes is dead. At Denver, Colo., on July 13, 1915, without suffering he quietly passed away.

His last peaceful hours were in striking contrast to his life of continual striving for the benefit of his fellow-men.

He leaves a record of successful effort in bettering mine conditions and a movement which will continue its uplifting work long after it shall be forgotten that he was its pioneer.

His constructive genius at the head of the Technologic Branch of the United States Geological Survey made possible the establishment of the United States Bureau of Mines as a permanent agency for mining betterment.

The Bureau of Mines came into existence in spite of great opposition, some openly voiced but much more in a great undertone of public belief which sincerely questioned whether the delicate and dangerous questions with which it must deal could be handled without dire results to the industry for which it was to be created.

Dr. Holmes as Director of the United States Bureau of Mines has managed the delicate and far-reaching work of the bureau with such rare sagacity as to command almost universal approval. Few men ever lived so aggressive a life and left behind so nearly universal approbation.

Always aggressive in overcoming the opposition to his plans for the uplift of humanity, always broadly considerate of the views of his opponents, always courteous and kind to his subordinates, always ready to cooperate with and give credit to the associates with whom he worked, Dr. Holmes leaves a memory

dear alike to his family and to the many friends to whom his death comes as a great personal bereavement.

MINE OPERATORS SHOULD JOIN MINING CONGRESS

A part of the mining men of the country are paying for a service from which all connected with the industry reap benefits. We refer to those who support the national organization of mine owners and operators. The American Mining Congress has the support of more than 1,500 of these men. There are 90,000 owners and operators of mines on the list of the Geological Survey. Each one of these should be contributing his pro rata to the national organization.

It is not necessary to present arguments as to the necessity of a national organization. The fact that they are maintained by every industry is sufficient proof of their need.

The amount of good that can be done by a national association depends directly on the support it receives from those it serves.

ETHICS HAMSTRINGING SCIENTIFIC RESEARCH

There is a tendency among scientists to be mean to each other. This has been demonstrated with particular clearness in the treatment accorded Dr. Walter F. Rittman. Before there was any possible chance of knowing what Dr. Rittman had discovered, he was the subject of bitter criticism. He was accused of going off at half cock. Some said he was claiming as original discoveries, well known truths. His standing as a scientist was questioned. There has been a general lack of kindness in the discussion of the Rittman processes.

Dr. Rittman is not the only victim. No scientific man feels safe. He realizes that he will be preyed upon by fellow scientists if he shows indications of being progressive enough to loosen, even a little, the straight-jacket of ethics.

Great learning oftentimes is coupled with narrowness. Jealousy often is a

more prominent characteristic in a well educated man than in the man not so well versed in books. If a greater spirit of cooperation could be instilled into the average scientific man it would mean much for mankind. Fortunately there are many exceptions to the above rule.

Physicians offer a good example where mistaken ethics are a bar to great good. Quacks and makers of nostrums advertise. This has been done for decades because they realize that this is the most effective means of gaining the attention of the public. Because quacks advertised first the conservative and able physician decided he would not advertise. From this beginning has grown the present opposition to advertising on the part of doctors of medicine. As a result thousands have suffered. They have accepted the advice offered them in their most available mediums. There has been no effort to offset this evil or to instruct the public in the need for care in selecting remedies and physicians. Many reasons are advanced to show that it would be impracticable for each physician to advertise. Even admitting this to be the case there is no reason why physicians' associations cannot use space in widely circulated publications. Terse warnings against the dangers of nostrums and concise instructions of proper procedure in case of illness would be blessings for the poor and ignorant. Better educated classes would benefit as well.

Just as ethics stand between physicians and great good they might accomplish, so are ethics and jealousies hamstringing a considerable volume of high class scientific effort in the United States.

MINING CONGRESS CONVENTION OFFERS UNUSUAL ATTRACTIONS

Every member of the American Mining Congress, both active and associate, is entitled to a seat at the Annual Convention to be held at Exposition Memorial Hall, San Francisco, Cal., September 20 to 22, 1915. The convention will be made up of members of the congress and delegates appointed by authority given in the official call.

We urge every member to take advantage of the opportunity to meet the mining men of the country and at the same time to attend the Panama-Pacific Exposition. Members who are planning to attend will confer a favor by advising the Secretary of such intention. The convention will follow the meeting of the American Institute of Mining Engineers and precede the meeting of the American Mine Safety Association. The two weeks beginning September 13 and ending September 25 have been selected as the meeting time of many of the engineering societies, and that period will probably witness the largest gathering of mining and professional men ever assembled in the country.

ALL SCIENCE CAN USE EVERY-DAY LANGUAGE

"I believe all science can be translated into language perfectly clear to the layman." This statement was made last week by Dr. E. Lester Jones, new superintendent of the Coast and Geodetic Survey.

In saying this Dr. Jones has expressed tersely a policy which is invading the entire Government Scientific Service. It is specially the case in the Bureau of Mines and the Geological Survey. We have found occasion to make mention of this fact frequently, and wish to take advantage of this opportunity of saying that the American Mining Congress heartily approves this course.

Mining has suffered severely from the fact that the public is not familiar with the industry. Owing to the fact that mining is necessarily conducted in isolated places and in certain restricted sections of the country, the opportunity for a proper conception of the industry has been limited.

The principles of agriculture are so well understood that it is very generally known that a man undertaking farming, given suitable land and proper equipment, is very likely to be successful.

The fact that farming lands are made the basis of ten times more swindles than are mining lands does not lead the public to believe that farming is not a safe business. If the same knowledge of mining were advanced, the fact that a grandfather had purchased some bad mining stock could not be given as a cause to condemn the whole mining industry.

Americans have great respect for Uncle Sam and the men who work for him. When they find that the Government's reports on mining camps and minerals are interesting and are easily understood much prejudice will be overcome.

The tendency toward the use of popular language in the Bureau of Mines and the Survey is certain to aid in increasing confidence in the industry among smaller investors especially.

CHIEF JUSTICE DEFINES AN UNFAIR LEGAL PRACTICE

Before litigations are undertaken or defended, consideration should be given to the following ruling by the Chief Justice of the United States:

"It is the office of the courts of justice to decide the rights of persons and property, when the persons interested cannot adjust them by agreement between themselves, and to do this upon the full hearing of both parties. And any attempt by a mere colorable dispute, to obtain the opinion of the court upon a question of law which a party desires to know for his own interest or his own purposes, when there is no real and substantial controversy between those who appear as adverse parties to the suit, is an abuse which courts of justice have always reprehended, and treated as a punishable contempt of court."

This should sink deep in the minds of those attempting to hamper legitimate undertakings by groundless legal claims.

INTERESTS OF MINE OWNERS BEING WATCHED CAREFULLY

If you are mining within the confines of the United States or its possessions, vigilant eyes are looking after your interests in the national capital. Nothing of import to the mining industry goes on very long in Washington without coming to the attention of the American Mining Congress. Perhaps it is a bill introduced by some Representative from Arkansas; maybe it is an important case before the Commissioner of the General Land Office; perhaps it is an activity of the Bureau of Mines or it may be any one of a hundred things affecting the interest of the man toiling on a western mountain side—regardless of what it is, it is being watched. The Arkansas Representative may want to see some other industry profit at the expense of mining. His bill has been in the hopper but a few hours until it is scrutinized by an American Mining Congress man. If it is inimical to the miner the alarm is given at once. Representatives and Senators from the mining sections of the country are notified. Newspapers are supplied with a concise account of the bill and the effect it will have on mining. The question is outlined in detail in THE MINING CONGRESS JOURNAL, the publication in which 1,500 of the country's mine operators are equal copartners. The Arkansas man would not get very far with his plan, it can be seen. This

continual alertness discourages many attempts to profit at mining's expense.

The great bulk of the work of the Washington office of the Mining Congress is constructive. Some negative work has to be done, because selfishness is well ingrained into human nature. We must watch our field to prevent unfair encroachment. But the big task is in keeping abreast with the needs of the industry and in seeing that it gets the legislation and the Government aid needed to highest and best development. Another task of no mean proportions is the acquainting of those who read *THE MINING CONGRESS JOURNAL* with the work that is being done as a result of the expenditure of many hundreds of thousands of dollars of the people's money.

The foregoing does not begin to express the things being done week in and week out by the Mining Congress. A full account in one article would be tiresome. We will break it up and tell you about it piecemeal.

PLACER MINERS DELAY GOVERNMENT REPORT

It is to be hoped that all operators of placer mines in the United States will cooperate actively with the Geological Survey in its attempt to compile one volume of all available information in regard to American placers. To be successful and to be timely, prompt and full information must be furnished the Bureau experts. Cards are being mailed to all operators on the Survey's list. This list doubtless contains no less than 95 per cent. of the operators, but should any man interested in placer mining not receive a card, it is urged that he request one at once.

As a rule mining men are very prompt to reply to these statistical inquiries sent out by the Government. It can be said, however, that this does not apply to a considerable portion of placer mining interests. There has been some tendency not to make these returns, we are informed. We take this opportunity to request members of the American Mining Congress who have placer interests, to aid in the very necessary work now in progress.

FOSSIL PLACER DECLARED TO EXIST IN NEW MEXICO

What is claimed to be a fossil placer has been discovered in the Baldy gold district of New Mexico. Willis T. Lee, a geologist in the Government service, has been sent to make investigations. The Baldy district is contiguous to the Raton coal district. It is a conglomerate in the cretaceous. The Baldy district has been producing about \$50,000 worth of gold ore per month.

JUDGE THOMPSON'S COMPILATION OF MINING LAWS IS READY

Two Volumes Published by Bureau of Mines of Interest to All Engaged in Mining Enterprises

The United States Bureau of Mines has just issued Bulletin 94, "United States Mining Statutes Annotated," in two volumes, which is now being sold by the Superintendent of Documents, Government Printing Office, Washington, D. C., at \$2.50 a set. It is the work of Judge J. W. Thompson, of the Bureau's legal department.

This bulletin is a compilation of all sections of the United States Revised Statutes and of all acts of Congress relating to mines, mining, mineral lands and the mining industry on the public lands. It is intended for persons engaged in mining enterprises that come within the scope of Federal mining laws and as a guide as to the determination of mining rights and duties. It shows the status of every Federal mining law, both laws relating to metal mining and those relating to coal, oil and phosphate and to mining on public, Indian and railroad lands.

The bulletin relates only to the United States mining laws and does not include any of the laws of the different states in regard to mining. Another bulletin which the Bureau of Mines hopes to print in the future will contain the state laws.

In addition to the Revised Statutes and the acts relating to metal, coal, and oil and gas, acts relating to the following subjects, as they bear upon the mining industry, are included: Alaska, Indian Lands, Lead Mines, Philippine Islands, Pipe Lands, Railroad Grants, Rights of Way, Salines and Salt Springs, Settlers' Relief Acts, State and Public Grants, Stone Lands, Timber Cutting for Mining Purposes, Town Sites, Tunnel Acts, and Withdrawals.

All sections and acts are annotated. These consist of abstracts of decisions of all courts and public officers wherein any of these sections or statutes are explained, construed and applied. The annotations are arranged under each section or statute with appropriate title lines in definite order, and consist of plain propositions of law, and point out how the courts have cured many defects, made clear the uncertainties, and aided in the practical application of these statutes. The large number and wide range of these decisions show that the practical value of the mining laws depends on their present status as established by the courts. The person interested is thus aided in determining the course to pursue in applying any given act to his mining enterprise.

The preparation of these annotations involved an examination of more than 2,000 volumes of reports of various courts and public officers. The work is indexed and any desired subject may be found readily.

The preparation and publication of this bulletin have been so expensive, it has been necessary to place a price of \$2.50 on the two volumes. The volumes are cloth bound.

REPORT ON EXPLOSIBILITY OF COAL DUST NEARLY READY

**Expected to be One of the Most Important
Publications Since Founding of Bureau
of Mines**

**English Comment Indicates Consideration
Being Given Experiments on Which
Work is Founded**

Within a few weeks at most, one of the very important publications of the year, issued by the Bureau of Mines will be ready for distribution. It deals with the methods of preventing and limiting explosions in coal mines. Its authors are George S. Rice and L. M. Jones. The findings are based upon more than 200 explosions in the experimental mine at Pittsburgh. The report is being awaited with great interest by technical men throughout the world—in fact, great interest has been evidenced by British and other foreign authorities.

The report is not voluminous. It contains forty-two printed pages. It is concisely written, and is sufficiently devoid of technicality to be readily understandable by any practical coal miner.

In another column of this issue of the JOURNAL is an editorial taken from one of the leading English publications, indicating the importance attached to the Bureau of Mines experiments with explosives of coal dust.

When these experiments were first begun at Pittsburgh, explosions were produced in a tube. Visiting miners doubted results obtained in this manner, declaring that the explosion would have behaved differently had it taken place in a mine. On hearing this, the late Dr. J. A. Holmes, determined to have experiments in an actual mine.

A convenient site was selected and mining operations were begun at once. A tunnel was run on a coal vein with care to do the mining as it would be done in the average coal mine.

Under these conditions, explosions were brought about, where results could be checked with great accuracy. During the course of these experiments more than 15,000 mining men have visited the experimental mine and have witnessed the conditions under which this has been done. They agree with the English authorities that this work is far in advance of any undertaken in any country.

Copper Plants Work Full Time

In Arizona V. C. Heikes, of the United States Geological Survey, reports conditions improving and all copper plants brought to full capacity with two new smelters blown in.

Mica Report Completed

Douglas B. Sterrett of the Geological Survey has written a report upon the production of mica in 1914, which just has been printed. It will be furnished upon application.

EDISON MINERS' LAMP PASSES BUREAU OF MINES EXAMINATION

A miners' portable electric cap lamp manufactured by the Edison Storage Batteries Co., of Orange, N. J., just has been approved by the Bureau of Mines for safety, practicability and efficiency. Approval No. 10 has been issued to that company.

All approved equipment is to be distinguished by a plate bearing the seal of the Bureau of Mines, the approval number and other information relating to the approval.

A large amount of other mining equipment is under test.

George Otis Smith to Visit West

Dr. George Otis Smith, Director of the Geological Survey, will leave the latter part of August for the Pacific Coast. He will get in personal touch with most of the work being done by the Survey in the western States. He will time his trip so as to arrive in San Francisco in time for the annual convention of The American Mining Congress, and the other annual scientific meetings which are being held during the same week.

Install New Map Press

A new four-color map press has been installed by the Geological Survey. It is being used to turn out the maps of the guide books.

Last 5 Per Cent. Costs.

It is a matter of record in the Geological Survey that it costs more to obtain the last 5 per cent. of the data on any mineral production, than it does to get the rest of the returns. The Survey is sparing no trouble or expense in trying to run down absolutely all production of minerals within the boundaries of the country.

Siliceous Ore Shortage May Continue

Reports from El Paso are to the effect that the shortage of siliceous copper ore is likely to continue. The smelter as a consequence will not be able to run.

Colorado Gold Output to Increase

The Colorado gold output of 1915 will be larger, as increased shipments of gold ore are made from the Georgetown and Radersburg districts, according to a Geological Survey estimate.

Nevada Camps Prospering

Reports reaching the Geological Survey, from Wonder, Fairview, Rawhide, Terrell, Benway, Bermice, Alpine and other Nevada camps, indicate that exceptional success is attending mining operations in these places.

SEARCH SYSTEMATICALLY FOR POTASH IN OLD LAKE BEDS

**Geologists Prospect in Nevada, California,
Oregon, Arizona, Utah, New Mexico,
Texas and Oklahoma**

H. S. Gale and N. H. Darton are conducting their examinations of various regions in the West and Southwest, with the view to determining centers of Permo-Triassic, Pleistocene evaporation, with the idea of discovering centers of saline deposit.

Mr. Gale's search will be confined mainly to Nevada, California, Oregon, Arizona and Utah. Mr. Darton will confine his activities to New Mexico, Texas and Oklahoma.

It is pointed out that the search for potash deposits is very much like hunting for the proverbial needle in a hay-stack. All reported discoveries of the salt are investigated as quickly as possible by experienced geologists. Thus far they have failed to find deposits of certain commercial value among the many which have been investigated. Small pockets of potash exist throughout an extended portion of the West, but they are not necessarily indications of the proximity of large bodies, it has been demonstrated. Some potash has been found to exist at Searles Lake, while smaller deposits have been found in the red beds of northwestern Texas. Representatives of the Survey are examining systematically a wide extent of territory, guided by the best theoretical knowledge obtainable. Drilling is to be undertaken in more of the Nevada basins in which pleistocene lakes were evaporated.

MANY ANTIMONY MINES ON NATIONAL FOREST RESERVES

Two-thirds of the antimony properties now in operation are on forest reserves, according to Government records. The fact that these properties are being operated at present is an indication, according to information from Government sources, that there never was a reason for their being idle, other than the low price of antimony.

BULLETIN ON MT. LASSEN TO BE ISSUED BY SURVEY

Owing to the popular interest in the eruption of Mt. Lassen, the Geological Survey has decided to issue a special bulletin on this mountain, and its volcanic activity. It is the one active volcano in the United States.

Land Applications Many

Applications of various kinds for public lands are averaging 2,000 a month. On each application the Geological Survey reports as to the character of the lands, whether they are of mineral or water power value. The Survey handles all engineering questions, while the legal questions are considered in the office of the Secretary of the Interior.

PERSONALS

Karl Kithil, in charge of mining technology at the Denver office of the Bureau of Mines, has started an investigation of the recovery of platinum from black sand and gold residues.

F. J. Bailey, senior clerk at the Bureau of Mines, has been promoted to assistant chief clerk. Mr. Bailey, however, has been performing the duties of chief clerk at the Bureau

for the past two years.

P. M. Riefkin, an engineer of the Bureau of Mines, is on a trip through the South sampling coal at Government stations.

G. H. Ashley spent two weeks last month on a vacation trip in the North and East.

Robert G. Wilson, of the Tonopah Development Company, was a business visitor to Washington early in July.

C. G. Storm, a chemist with the Bureau of Mines at Pittsburgh, has resigned to take a position with the Aetna Explosive Company.

A. Cressy Morrison, secretary of the National Acetylene Association, spent a few days in Washington on business recently.

T. S. Harrison, of Cody, Wyo., a mining engineer well known in Colorado and Wyoming, has been spending several days in Washington on business. Mr. Harrison is devoting most of his time at present to the Grass Creek Oil Field. While a considerable portion of the field is tied up on account of withdrawals, Mr. Harrison reports that some drilling is being done and encouraging prospects are entertained by operators in that section.

WAR STIMULATES INTEREST IN CHEMISTRY IN U. S.

As a direct outcome of the war, there has been a greatly increased interest in chemistry. This is shown at the Bureau of Mines and Geological Survey by the numerous inquiries along chemical lines that are being received. While greater interest attaches to the chemistry of explosives, other features of the science are being brought out by the changed conditions due to the war.

MANY ASK NAMES OF BUYERS OF ANTIMONY

An unusually large number of inquiries are coming to the Geological Survey, asking the names of buyers of antimony. The Survey's list of buyers is thought to be absolutely complete, and is being furnished immediately upon application.

UNION PHOSPHATE COMPANY LOSES ITS APPEAL FOR LODE CLAIM AND MILL SITE

**Idaho Company Fails in Long Fight Over Mining Properties in Blackfoot District
—Motion for Rehearing Denied—Other Important
Mineral Land Decisions**

A decision in the important case of the Union Phosphate Co. in the matter of mill site—a rejection of an application for a lode claim—just has been rendered by A. A. Jones, First Assistant Secretary of the Interior. The decision may be summed up briefly as follows:

"Section 2337, Revised Statutes, contemplates that a mill site used and occupied only for mining purposes in connection with a lode mining claim or group of claims shall be patented simultaneously with the lode claim or claims to which it is appurtenant, unless the lode claim or claims shall have been previously patented; and the rejection in its entirety of an application for patent to a lode claim or group of claims carries with it an included application for patent to a mill site used only in connection with such claim or claims."

Mr. Jones, in his statement of the ruling, says, in part:

AN APPEAL FROM THE COMMISSIONER

"This is an appeal by the Union Phosphate Co. from so much of the commissioner's decision of October 6, 1913, as holds for rejection its mineral application 012,751, to the extent of the North Lake mill site claim, Blackfoot land district, Idaho.

"The mill site claim was applied for in connection with the Bingham, Original, Broken Hill and Mohawk lode mining claims, and the commissioner's action with respect to the mill site claim is based on the grounds (1) that it did not appear from the record then before him that there was or had been at the date of the application any use or occupancy of the ground for mining or milling purposes; and (2) that subsequently to the date of the mill site location, the filing of the application for patent, the submission of proof thereon, and payment for the land, the mill site area was included in an executive order of withdrawal for power site purposes.

"The appeal is accompanied by an affidavit of the attorney in fact for the appellant company, wherein he avers that the mill site claim is now and was at the date of the application used and occupied as a dumping place for material taken from the tunnel (whose portal is on the mill site) projected for the purpose of developing certain lode mining claims, including those embraced in the present application. It is urged in the appeal that the use of the ground for dumping purposes is such a mining use and occupancy as is contemplated by section 2337, Revised Statutes, and that

this, together with the fact that the claim had been applied and paid for at the date of the withdrawal, operated to except the area from the withdrawal.

"A consideration of the questions thus presented is unnecessary to a determination of this case for the present application must, in any event, on the record as it now stands, be rejected, for reasons other than those assigned by the commissioner.

LOCATED IN 1907

"The lode locations, above mentioned, and with which and in the same application the mill site is sought to be patented, were made December 9, 1907, on account of deposits of rock phosphate contained therein. They lie end to end from north to south in the order in which they are named, along the line of outcrop of the phosphate deposit and form the northerly four of a group of fifteen claims, all located along a continuous outcrop of the same bed, extending for a distance of over 4 miles. The improvements, aside from two small excavations, of a total value of \$25, situated on the Original location, whose value is sought to be applied to these four claims in satisfaction of the statutory expenditures, consist of an undivided one-fourteenth interest in the cost of a tunnel, denominated by the United States mineral surveyor as improvement No. 3 whose total cost is given as \$3,230. Other workings are described.

"The width of these excavations, which is only 4 feet, and the numerous courses in which they are projected do not suggest to the department any intention on the part of the claimants to utilize the same as a working tunnel for the ultimate development of any of the claims here in question.

NO MILL EXISTS

"The mill site claim, included in the application, has no mill or reduction works thereon, but is utilized as a dumping place for material taken from the tunnel.

"The law relating to the patenting of mill sites, section 2337, Revised Statutes, reads as follows:

"Where nonmineral land not contiguous to the vein or lode is used or occupied by the proprietor of such vein or lode for mining or milling purposes, such nonadjacent surface ground may be embraced and included in an application for a patent for such vein or lode, and the same may be patented therewith,

subject to the same preliminary requirements as to survey and notice as are applicable to veins or lodes; . . . The owner of a quartz mill or reduction works, not owning a mine in connection therewith, may also receive a patent for his mill site, as provided in this section."

"The law thus divides patentable mill sites into two classes: (1) Such as are used and occupied by the proprietor of the vein or lode for mining or milling purposes; (2) such as have thereon quartz mills or reduction works the ownership of which is disconnected with the ownership of the vein or lode. The second class may be, of course, patented independently of the lode mining claim. As to the first class, however, the law clearly contemplates that such a mill site shall be patented, if at all, only simultaneously with the lode claim or claims to which it is appurtenant unless the lode claim should have been previously patented. From this it follows that the rejection in its entirety of the application for patent to a lode claim or group of lode claims would carry with it also an included application for patent to a mill site asserted to have been used and occupied only for mining purposes in connection with the lode claim or claims to which such mill site is appurtenant.

"The application for patent to the lode claims here in question, having failed for the reasons above stated, the included application for the mill site claim must also be rejected.

"The judgment of the commissioner is accordingly affirmed.

"A motion for rehearing was denied by Assistant Secretary Sweeney."

DECIDES AGAINST COMPANY

Pacific Midway Oil Property Illegally Held, Interior Department Holds

One of the most notable cases which has come before the Land Office in years is that of the United States versus Pacific Midway Oil Company et al.

The land involved is situated near Maricopa, in the Sunset mining district of Kern County, California. More than a score of wells have been drilled upon this land. Enormous quantities of high grade ore have been recovered. It is agreed that more than \$900,000 has been spent in the development of the oil properties upon the land.

The land was classified as oil land June 22, 1909. On September 27 of the same year it was included in a departmental order designated as petroleum withdrawal No. 2.

CLAIMS OF COMPANY

The Pacific Midway Oil Company filed mineral application in this district April 28, 1911. The company claims: that through compliance with the mining regulations by it and its predecessor, it had become the owner of the Hawk Mining Claim; that its right of possession is based upon locations made by G. E. Taylor and others, on February 12, 1909

(seven months prior to its inclusion in the petroleum withdrawal).

Drilling operations on the property began in February and March, 1909. A complete standard outfit was installed by one of the original locaters. Thereafter, the Obispo Oil Company, a successor, began drilling for oil with the same rig. Oil in paying quantities was discovered June 6, 1910. The company claims that it is entitled by law to the land, as at the time of inception of development on any claim it was not withdrawn from mineral entry, and that the work of development was prosecuted uninterruptedly, until actual discovery of oil had been effected.

The Government charges that the location of the Hawk Placer Mining Claim was made by G. W. McCutchen, one of the alleged locaters, for his own use and benefit, through the use and employment, with their full knowledge and consent, of the names of his alleged co-locaters with the purpose and intent, by such device, fraud and concealment, to secure thereby, unlawfully, in direct violation of the statutes, a greater area of mineral ground than may be embraced, lawfully, in a single location by one individual.

GOVERNMENT CONTENTION

The Government also alleges that the various locaters did not in good faith locate and file location notices for the above described placer claim, with the intent that the legal title to the land embraced should be acquired pursuant to the law of the United States governing the locations, entry or disposition of public lands, valuable as placer ground, for their separate and several use and benefit.

Each of the persons mentioned made location and filed notices, it is alleged, pursuant to an unlawful agreement and understanding, either expressed or implied, entered into by each and every one.

Answer filed to these charges denies generally the charges preferred, and sets forth as matters of special defense that G. W. McCutchen and others had filed on another tract in 1900 in which the location was made for the use and benefit of all locaters. Title was relinquished by all except one, it is claimed, for the purpose of convenience in managing and operating the claim for the use and benefit of the locaters.

The actual facts in these negotiations, as set forth by the Commissioner of the General Land Office, are as follows:

"From the year 1899 to the year 1912, the McCutchen brothers, G. W., R. L., J. B., and W. C., were engaged in the business of locating and developing oil lands in Kern County. During this time numerous locations were made, and in a great many of them the names of the four McCutchen brothers were used together with those of four other persons. No articles of copartnership appear to have been executed until about the year 1912, but the four brothers appear to have been interested equally in most of the property located or developed.

"G. W. and R. L. McCutchen were the active members of the firm, or family association, and it is probable that they were interested in some

properties in which the other two brothers had no concern.

DID PUBLIC LOCATING

"Some of these locations were made in advance of any prospective purchaser and others were made at the request of interested persons. The McCutchens would search the records, ascertain what lands were vacant, and would locate and personally secure oil lands for \$10 per location, \$80 for a quarter section. They would perform assessment work upon the claim, if so employed."

One of the original locaters of the Lone Star claim was not consulted, the owner says, as to the use of her name and no other of the six locaters expected to receive any beneficial interest in the claim, or any compensation for the use of his name in connection with it. They permitted McCutchen to use their names as an accommodation, and not one of them, with the possible exception of White, intended to represent any or all of the original locaters.

G. W. McCutchen executed a quit-claim deed conveying his section to the Obispo Oil Company in February, 1909. After the organization of the company, the expenses for development were paid by it. The Obispo Oil Company drilled two original wells, which exhausted available funds, and work was discontinued. The Obispo Company did not resume work upon the claim.

Rinehardt. T. Harding, a San Francisco attorney, visited the region in 1910. He was informed that he could make a deal with the Obispo Oil Company for the land upon which its wells had been drilled. Harding conferred with the officers of the company, and made arrangement for the development of the property. He thereupon set about to organize the Pacific Midway Oil Company. This company began operation in March, 1910, when the two old wells were examined. The first was found to be unserviceable, but it was believed that operations could be continued upon the second. This later was abandoned, and work upon a new well started. Oil in paying quantities was discovered at a depth of 1,600 feet, June 5, 1910. Various operations were conducted on surrounding lands thereafter by G. W. McCutchen.

COMMISSIONER'S CHARGE

This statement appears in the Commissioner's account of the case:

"With the exception of the discovery of oil in such quantities as to impress the land with mineral character, about which there was no controversy, there is scarcely a material representation made in the sworn statement, upon which the patent application was based, that was not proven erroneous or untruthful by the testimony adduced by the applicant at the trial."

This conclusion was drawn:

"Therefore the statement in the application 'that said work of development was prosecuted from the inception of development, uninterruptedly and with diligence by the locaters and their successors, until an actual discovery

of oil had been effected' is disproven in that there was a period of more than six months, after the Obispo Oil Company ceased its operations, and during which time the withdrawal order intervened, before work was done by the applicant."

The discovery of oil was made in a well begun by the Pacific Midway Oil Company long after the withdrawal order of September 27, 1909, the Government claims.

The Government has not sought to deny this patent upon the ground that the claim was transferred before the actual discovery of oil.

The recommendations of the Register and Receiver of the Land Office at Los Angeles, dated July 28, 1914, asked that the charge be dismissed and that the amended application for patent be accepted and filed, and the patent to the land be issued. This decision of the Los Angeles office is over-ruled by the Commissioner of the General Land Office and upheld by the Secretary of the Interior.

MAN WITH EXTENDED WESTERN EXPERIENCE HEADS LAND OFFICE

**Clay Tallman, Farmer, School Teacher, Miner
and Lawyer, Well Fitted for Important
Post**

A self-made man of exceptional ability is the Commissioner of the General Land Office, Clay Tallman, who has occupied this position since 1913. He is thoroughly familiar with the West. He was one of the pioneers at Bull Frog and Rhyolite, Nev., and has seen the rise and fall of half a dozen camps. In addition he has an intimate knowledge of conditions in New Mexico, Colorado and California.

Mr. Tallman was born on a farm in Ionia County, Mich. Rocks and mortgages were the chief characteristics of the particular farming district in which Mr. Tallman was born and reared. As a result he learned early in life the meaning of gruelling labor. Hardships and self-denial were part of his day's existence for many years. In addition to the heavy work allotted to him, he managed to attend school during the short winter term.

Following the completion of his common school course, he attended the Michigan Agricultural College where he was graduated in 1885. Following this he served as the principal of a Michigan high school for a short time, and then went west.

He attended the University of Colorado, and later was superintendent of schools at Del Norte, Colo. Here he decided to take up the study of law, and returned to the University of Michigan law school, where he was graduated in 1904. He then went to New Mexico where he spent a year traveling about the state on professional business, looking principally into land matters.

When the mining boom was on in Nevada, he went to Bull Frog and Rhyolite where he became actively interested in a number of mining properties. He is responsible for bringing a large amount of capital into these camps. He



CLAY TALLMAN

Nevada Man who is Commissioner of the General Land Office

personally looked over much of the country in the Death Valley vicinity and knows what it means to live on the perimeter of civilization. During this entire time he was doing some work with his law practice. Finally he changed his residence to Tonopah and took up actively the practice of his profession.

In 1908 he was elected a member of the state Senate. During his two sessions in that body he was chairman of the judiciary committee, and was influential in putting on the statute books of the state as progressive legislation as that enjoyed by any commonwealth in the union.

In 1910 Mr. Tallman was elected chairman of the Democratic State Central Committee. He ran for Congress in 1912 and was defeated by sixty-nine votes.

The year following he was summoned to Washington as chief law officer of the Reclamation Service, from which position he was transferred to that of Commissioner of the General Land Office.

FIFTEEN MILLION ACRES ARE OPENED FOR SETTLEMENT

All records were broken during the last fiscal year in the making of surveys of public lands, according to reports submitted to Secretary Lane, by Commissioner Tallman, of the General Land Office. The total of ac-

cepted and approved surveys aggregated 14,339,349 acres. This was nearly double the amount surveyed during the preceding year, and 4,589,872 acres more than was surveyed in 1909, the previous high-record year.

The approval of the surveys opens up to settlement the land the surveys of which have been accepted. In the development of the western country particularly in the Rocky Mountain and Pacific Coast region, the demand by prospective settlers for land open to entry is very great. This demand has resulted in the extraordinary increase in the amount surveyed.

Secretary Lane regards the achievement of the Land Office as all the more noteworthy, because of the increased physical difficulties encountered in surveying virgin country in mountainous territory where the land on the lower levels already has been opened to settlement.

The surveys now are made not by the contract system with private surveyors as was the practice for half a century, but by the direct survey system put into operation two years ago whereby all of the 150 surveying parties are made up of regular employees of the Department of the Interior. Greater accuracy and efficiency have resulted from this system.

CALIFORNIA MOTHER LODE TO BE SUBJECT OF STUDY

The Mother Lode district of California is to be made the subject of special study, beginning this month. Special reference is to be paid to the gold quartz veins.

This work will be in charge of Adolph Knopf of the Geological Survey. One of the problems he will attempt to determine, is the changes, if any, that take place in ore bodies with depth. He also will attempt to ascertain whether any reason exists to expect other ore shoots below those known to exist.

GEOLOGICAL REPORTS FROM SOUTH AMERICA ARE HARD TO GET

Difficulty is being experienced in the library of the Geological Survey in obtaining copies of geological reports from South American countries. Just at this time, American geologists are paying a great deal of attention to South America, owing to the possibility of developing on that continent certain minerals which are needed urgently in the United States. The United States is interested, in a general way, in the development of American deposits of minerals for which it has been dependent upon Europe in the past.

To Testify at Phoenix

H. G. Ferguson, the geologist who sampled and examined contested mineral claims in the Grand Canyon district, will testify early in August, at a hearing which is to be held at Phoenix, Ariz.

HIGH FREIGHT RATES ON MINING RAILROADS IN NEVADA JUSTIFIED

Interstate Commerce Commission Rules in Goldfield Consolidated Mines
Company Case—Gives Interesting History of Lines—Other
Traffic News and Developments.

After long investigation concerning the reasonableness of freight rates from various points in the United States to points on certain railways in Nevada, the Interstate Commerce Commission has ruled in the case of the Goldfield Consolidated Mines Co. against the Southern Pacific, that the rates complained of are not unreasonable.

These salient facts are necessary to a thorough understanding of the ruling:

"There is practically no general freight traffic on the Tonopah & Goldfield R. R., Bullfrog-Goldfield R. R., Las Vegas & Tonopah R. R., and Tonopah & Tidewater R. R. north of Ryan, Cal., except the transportation of supplies to Tonopah, Goldfield, and Millers, Nev.

"The lines of these railroads pass through an arid and mountainous region barren of timber, and nearly devoid of other vegetation, with severe grades and difficult operating conditions."

REVIEWS CAMPS' HISTORIES

Commissioner Meyer, in discussing this case, says, in part:

All of these statements tended to show that the rates from California and from eastern points to Goldfield were upon a higher level than the rates to Arizona points referred to, and some of them were higher than the rates on corresponding articles to Ely and Austin, Nev., over equal or greater distances. Ely is the center of a copper mining district on the Nevada Northern R. R. This railroad extends in a southerly direction from Coble, Nev., a point on the Southern Pacific Co.'s line 646 miles east of San Francisco, to Ely, a distance of 140 miles. Austin, Nev., is a point on the Nevada Central R. R. This road extends in a southerly direction from Battle Mountain, on the Southern Pacific Co.'s line, 477 miles east of San Francisco, to Austin, a distance of 93 miles. A statement was offered showing the elevations of the various summits crossed on the line of the Nevada Northern R. R., but no testimony was introduced showing the transportation or traffic conditions on the Nevada Central R. R.

Tonopah and Goldfield are mining camps about 30 miles apart, located in the western part of Nevada in the midst of a wide region with practically no present agricultural possibilities. Tonopah is served by the Tonopah & Goldfield R. R., which extends from Goldfield through Tonopah to Mina, a distance of 100 miles, where it connects with the Southern

Pacific line. This section of the Southern Pacific line extends from Hazen, Nev., a point on that company's line 289 miles east of San Francisco and 138 miles north of Mina, in a general southerly direction through Nevada and California, and connects with the Southern Pacific Co.'s main line in southern California at Mojave, 532 miles south of Hazen.

Goldfield is served by the Tonopah & Goldfield R. R., which hauls traffic into that camp from the north in connection with the Southern Pacific line, and is served also by the Bullfrog-Goldfield R. R., which extends in a southerly direction from Goldfield to Beatty, Nev., a distance of 79½ miles. At Beatty this road connects with the Tonopah & Tidewater R. R., which extends in a southerly direction 168 miles from Beatty to Ludlow, at which point it connects with the Atchison, Topeka & Santa Fe R. R., hereinafter called the Santa Fe. At Beatty connection is also made with the Las Vegas & Tonopah R. R., extending from Beatty in a southeasterly direction 118.4 miles to Las Vegas, Nev., where connection is made with the San Pedro, Los Angeles & Salt Lake R. R., hereinafter called the Salt Lake line. Both Tonopah and Goldfield are, therefore, served by competing routes from California points and from the east.

SILVER DISCOVERED

Much could be said of the prospects that induced the building of each of these lines. A silver mine was discovered at Tonopah in the latter part of the year 1900. During 1901 the discoverer of this mine permitted lessees to operate on various parts of the property, and a very large amount of ore was taken out. Tonopah was then 60 miles from the nearest railroad, a narrow-gauge line then known as the Carson & Colorado R. R., extending from a point on the Virginia & Truckee R. R., about 40 miles south of Reno, Nev., to Keeler, Cal. This railroad is now a part of the Southern Pacific system. Ore had to be hauled by wagon to the railroad and thence shipped to mills or smelters at or near Salt Lake City or San Francisco. Only the most valuable ore was of sufficiently high grade to bear the high transportation charge.

The lessees, therefore, piled upon the dumps a large quantity of ore that either had to await the construction of mills or the establishment of a cheaper method of transportation. There were no mills in Tonopah at that

time and the immense ore tonnage then in sight and the prospective tonnage from the development of this mine and others soon discovered, the rapidly increasing population, and the large amount of building necessary to house that population were the principal inducements to the building of the first railroad.

COMPLETED IN 1904

The Tonopah R. R. was completed from Mina to Tonopah July 4, 1904. It was a narrow-gauge line about 70 miles long and is said to have cost \$993,000.

Gold mines were discovered at Goldfield in the fall of 1903; activities began in 1904, but the real rush did not take place until 1905. The migration of men and money into this section of Nevada for the development of these mines is said to be without parallel in the history of mining development in the West since the first discovery of gold in California. The lessees on the various properties in Goldfield had to haul their ore to Tonopah, the then nearest railroad station. The rich ore veins and prospective tonnage, the rush to Goldfield, and the extraordinary building activity, all combined to induce the building of the extension of the Tonopah R. R. to Goldfield. This was completed into Goldfield in 1905. The Tonopah R. R. was reconstructed into a standard-gauge line and the two were consolidated under the name of the Tonopah & Goldfield R. R. At about the same time the line of the Southern Pacific Co. from Mina north was made a standard-gauge railroad. A cut-off, known as the Hazen cut-off, was constructed from Churchill to Hazen and a through standard-gauge railroad was for the first time in operation from California and eastern points to these mining camps.

The tonnage and travel over the Tonopah R. R. during the 16 months of its operation as a narrow-gauge road was so great as to tax its capacity to the utmost, and its net income during the period named was sufficient to pay for more than one-half its original cost. The population of Goldfield during the years 1905 and 1906 was estimated at approximately 20,000 people. Tonopah had a population of nearly 10,000, while the outlying mining districts that drew their supplies from or through these camps had a population of at least 10,000 persons. In the vicinity of Beatty and Rhyolite, 75 miles south of Goldfield, many promising mines had been discovered, and important development work was going on. In this district alone prior to the building of any railroad to that point probably 10,000 persons had established at least a temporary residence. A large amount of lumber for building purposes, supplies for mines, and the necessities of life for the persons who had flocked into the district were being hauled by wagon from Goldfield or from Las Vegas, and the confidence of the mine operators in the value and future of these mines was almost unlimited. Under these circumstances the Bullfrog-Goldfield R. R. was projected and built from Goldfield to Beatty and Rhyolite in the winter of 1905-6.

While the promoters and builders of this road were in large part the same men who had constructed the Tonopah & Goldfield R. R. and held a large interest in that road, the Tonopah & Goldfield R. R. Co. took no part in the construction, financing, or subsequent operation of the Bullfrog-Goldfield R. R.

OUTLET FOR BORAX

The Tonopah & Tidewater R. R., extending from Ludlow to Beatty, a distance of 168 miles, was completed in December, 1907. This road was constructed primarily to furnish a rail outlet for the borax deposits in Death Valley, Inyo County, Cal. These deposits are reached through a short branch line from Death Valley Junction, a station 37 miles south of Beatty. The borax deposits on this line had been developed many years before, and prior to the time of the building of the railroad a very large tonnage of borax had been produced and hauled out by teams. There were also deposits of talc, clay, and silica that promised to furnish a considerable tonnage. The mines near Beatty, the strong demand for transportation facilities to transport lumber and supplies thereto, and the prospective ore tonnage were the inducements that brought about the extension of this road to Beatty.

The Las Vegas & Tonopah Railroad was completed from Las Vegas to Beatty, 119 miles, in October, 1906, and to Goldfield in October, 1907. The promoters and builders of this road were the same men who built and controlled the Salt Lake line. The Salt Lake line runs, for the most part, through an exceedingly barren and sparsely settled country in Utah, Nevada, and California. Its traffic was very light, and the tremendous mining development and influx of population into these mining camps of western Nevada offered a strong inducement to the owners of this property to try to secure some of the traffic in ore and supplies then offered and in prospect.

DID OWN CONSTRUCTION

The Las Vegas & Tonopah Railroad was constructed under the direct control of the officers of the corporation and its employees. No contracts were let except contracts for grading. The book cost of the construction of the line from Las Vegas to Beatty was \$1,148,309.15, and of the part of the line from Beatty to Goldfield, \$1,692,753.82. Stock to the amount of \$1,500,000 was issued and sold at par and notes of the company were given for the balance, amounting to approximately \$1,341,000. Neither interest nor any part of the principal has ever been paid on any of these notes up to the present time.

The Bullfrog-Goldfield Railroad was constructed by the Armagosa Construction Company under a contract with the railroad company under the terms of which there were delivered to the construction company \$1,992,500 in the capital stock of the railroad company and \$1,500,000 first mortgage bonds and \$184,000 bills payable, in consideration of which the construction company turned over to the railroad company a completed line of railroad 79

miles long, extending from Goldfield to the vicinity of Rhyolite, with sidetracks, stations, terminals, and equipment, and a considerable amount of materials and supplies and other property. The record does not disclose whether or not the officers and directors of the construction company were the same as of the railroad company for whom the railroad was built. The road has never paid its operating expenses, and the deficiency has been made up each year by the controlling corporation, which is the Tonopah & Tidewater Railroad Company.

The Tonopah & Tidewater Railroad was built by the railroad company itself, and no contracts were let except for some grading in the Armagosa Canyon, where certain heavy work was encountered which required more stock and equipment than the railroad company possessed. The total original book cost as reported by the railroad company was \$3,573,673.67. Bonds were issued for 675,000 pounds sterling, and the cash realized from the sale of these bonds, amounting to \$3,285,344.10, built and equipped the road. While this road has been able to earn enough to pay its operating expenses, it has not been able to meet its interest obligations since 1908, and the deficiency has been paid each year by the Borax Consolidated Company of London. This company has guaranteed the bonds of the railroad company. The largest deficiency for any one year was \$100,609.84, in 1911, and the smallest deficiency was \$25,140.89, for the fiscal year of 1913. The annual interest on the bonds of this road amounts to approximately \$150,000. About two-thirds of this interest has been paid by the railroad company and one-third by the borax company, guarantor of its bonds.

BUILT BY MINING COMPANY

The Tonopah Railroad was built by the Tonopah Mining Company, at that time owning and operating the principal mine in Tonopah. The president of the mining company was also the president of the railroad company, and was a director in both companies. The extension of the road from Tonopah to Goldfield was constructed by the Pacific Construction Company, and was then called the Goldfield Railroad. The stock in the construction company was all held by three men, and these men were all stockholders and directors of the Goldfield Railroad. The Goldfield Railroad and the Tonopah Railroad merged their properties into what is now the Tonopah & Goldfield Railroad.

The total book cost of the Tonopah Railroad as it stood at the time of the consolidation was \$1,476,000, and the book cost of the Goldfield Railroad was \$1,110,000, making the total book cost of the Tonopah & Goldfield Railroad approximately \$2,586,000. Twenty-one thousand five hundred shares of stock were issued in the name of the company of the par value of \$100 per share, and bonds were sold to the amount of \$1,017,000. The total capitalization as represented by the stock and bonds of the company amounted to \$3,167,000.

From October, 1907, to July, 1914, two parallel lines of railroad, the Las Vegas & Tonopah and the Bullfrog-Goldfield, were

operated from Beatty to Goldfield. In July 1914, a consolidation was effected by which one of these lines was abandoned and the traffic of the Tonopah & Tidewater and of the Las Vegas & Tonopah is now brought to Beatty and from that point hauled over the line of the Bullfrog-Goldfield Railroad to Goldfield. It is expected that this consolidation should result in a considerable saving in operating expenses. During the years 1911, 1912, and 1913 neither the Bullfrog-Goldfield nor the Las Vegas & Tonopah received enough revenue from operation to pay operating expenses and taxes, and the Tonopah & Tidewater Railroad has not since 1908 earned sufficient revenue to pay its operating expenses and fixed charges. The deficiency of the Las Vegas & Tonopah Railroad has been paid by its stockholders, that of the Bullfrog-Goldfield by the Tonopah & Tidewater, and that of the Tonopah & Tidewater Railroad by the Borax Consolidated Company.

ONLY ONE PAYING

The only one of these four roads that has been able to return any dividends to its stockholders is the Tonopah & Goldfield Railroad. This road has been able to pay and return dividends to its stockholders of $5\frac{1}{2}$ per cent. during the years of its operation, and to retire, through its sinking fund provision, approximately 60 per cent. of the bonds outstanding at the time of its completion. Its total outstanding bonded debt is now \$400,000. All of these roads are almost entirely dependent on the operation and development of the mining industries in the territory which they serve. The total irrigated and cultivated area along the lines of these four roads, comprising 500 miles of line, does not exceed 500 acres of land. There is no timber along any of these lines and very little stock. Most of the country traversed is not adapted to stock raising on account of the scarcity of water, the small rainfall, and arid climate. The sparsity of traffic on the lines south of Goldfield is shown by the fact that the mixed train from Las Vegas to Beatty, which runs six times a week, averages from eight to eleven passengers and from one to three carloads of freight, and returns with a like number of passengers and almost no freight whatever. The trains on the Tonopah & Tidewater Railroad carry about a like amount. The total tonnage handled by the Las Vegas & Tonopah Railroad during the month of October, 1914, was 2,891 tons, and by the Bullfrog-Goldfield Railroad, 2,888 tons. The average tonnage per train was 57.8 tons.

The greatest tonnage handled by the Tonopah & Tidewater Railroad during any one year was 77,548 tons, or an average per train of 124 tons, and the smallest tonnage was 52,924 tons, or 85 tons per train. More than one-third of the tonnage handled by this road is borate, the crude rock from which borax is made. This is mined at Ryan, Cal., about 37 miles south of Beatty. The Tonopah & Goldfield Railroad is the only one of these four roads that handles any great amount of ore tonnage from either Tonopah or Goldfield. The mill used by the Tonopah Mining Company is situated at Millers, 11

miles from Tonopah, and the ore is hauled by rail to this mill. The revenue derived from the haul of this ore during the fiscal year 1914 was approximately \$144,000, or 21 per cent. of the total operating revenue of the road. The total tonnage of freight, exclusive of ore, moved by the Tonopah & Goldfield Railroad during the fiscal year 1914 was 70,844 tons, or 113 tons per train each way for each working day. The freight business is practically all moving in one direction, and the trains return to Mina almost without load.

FEW ACCIDENTS

The record shows that these roads have been subjected to certain accidents, washouts, and fires, but none of very great consequence.

The direct effect of an order of the Commission was to reduce the rates from California points to points in Nevada, but owing to the fact that many rates from eastern points were made by combination over San Francisco, Sacramento, or Los Angeles, reductions were thus brought about from eastern points to this territory. The various orders of the Nevada Railroad Commission have also had the effect of reducing the rates on some of these railroads. A rather notable case is one concerning the rates on forest products from Verdi, Nev., to Tonopah and Goldfield, which resulted in very material reductions in the rates on mining timbers and other lumber.

The scale of wages paid to all the employees of these roads, with the exception of the general officers, is from 25 to 65 per cent. higher than the average upon all railroads in the United States. The scale of prices which all of these employees and all other persons residing in these mining camps have to pay for the necessities of life is materially higher than in other parts of the United States. This makes necessary a corresponding increase in the compensation paid to labor of all kinds.

OUTLOOK NOT BRIGHT

The outlook for the future from the development of new business for these roads is rather gloomy. As before stated, there is little agriculture and no timber along these lines. The country is so arid that without water to irrigate it is almost impossible to produce a crop. There are no streams of any consequence in this territory. A few flowing wells have been developed near Las Vegas, but the results from the use of this water have so far been of small importance. These roads are dependent for traffic upon mining industries in the country traversed by them. The lives of silver or gold mining camps in that state have always been limited. The towns of Rhyolite and Beatty in 1907 had a combined population of probably 10,000 people. Their population now is estimated at 300. As previously stated, Goldfield had a population in 1907 variously estimated at from 15,000 to 20,000 persons. The population now is said to be approximately 5,000. Tonopah had a population in 1907 of nearly 10,000 people, while the present population is not more than half that number. Nearly the same proportionate shrinkage has taken place in the popula-

tion of the other outlying mining camps of Silver Peak, Manhattan, and Round Mountain. Sooner or later the ore will become exhausted, and unless new ore bodies are discovered the mills will be dismantled and the population will in large part move away. The railroads built primarily to serve such camps as these can hope for only a limited lease of prosperity. They prosper only while the camps prosper, and the decline of the camps means the decline of the roads. The Tonopah & Tidewater, the Las Vegas & Tonopah, and the Bullfrog-Goldfield entered these camps too late to enjoy the full tide of prosperity, which began to wane in the fall of 1907.

The Tonopah & Goldfield Railroad Company had two or three very prosperous years. Its present revenues, however, are not excessive, and its management asserts that all possible economies are being observed consistent with the quality of service demanded and furnished.

JUSTIFIES COAL RATES

Commission Upholds Carriers in Illinois-Omaha Charges Case.

In the matter of the coal rates from Illinois mines to Omaha, Neb., and other points, the Commission ruled that the proposed increase from \$2.05 to \$2.25 per net ton on the rate for bituminous coal, from points on the Southern Railway in the Belleville, Ill., district, to Omaha and points grouped therewith, is justified. The Commission says:

"The Belleville district in Illinois comprises an area extending for some distance north, east, and south of East St. Louis. The producing points involved are located along the St. Louis-Louisville divisions of the Southern Railway in that district. The northern section of the Belleville district overlaps the southern section of the Springfield group of points. A rate of \$2.05 applies from the Springfield group to the destinations involved. The current rate of \$2.05 from the lower section of the Belleville group, effective September 28, 1914, involved generally a reduction from \$2.25, which represented an increase effected after various fluctuations, in 1909. For some time the Southern Railway carried the \$2.05 rate in connection with the Rock Island and Burlington lines, respectively. Its withdrawal in 1909 was at the request of the Rock Island and the Burlington. A rate of \$2.40 applies from Southern Illinois mines, south of the Belleville district.

"The Wabash was prompted to join with the Southern in the \$2.05 rate because its equipment, used to move grain eastward from the Omaha market, was returning light and the development of coal tonnage for the westbound movement was desirable. It did not appreciate, however, that the reduction would disturb the adjustment of coal rates from Illinois to Omaha. Admittedly the maintenance of the reduced rate would, on the basis of the present differences, result in lowering the rate from Springfield to \$1.85 and from southern Illinois to \$2.20, while the other Belleville district lines presumably

would insist on carrying a rate of \$2.05 from other districts. Rates of \$2.05 from the Springfield group, \$2.25 from the Belleville group, and \$2.40 from southern Illinois, although not consistently maintained, are considered by the Wabash and the intervening lines to represent the normal basis. The Belleville group rate is composed of a proportional rate of 25 cents to East St. Louis and a local rate of \$2 from East St. Louis to Omaha; the southern Illinois rate of a proportional of 40 cents to East St. Louis and the \$2 local rate beyond. A bridge charge of 20 cents over the Mississippi River is absorbed by the Wabash. The revenue of the Southern is the same whether the rate is \$2.05 or \$2.25—\$1.80 per ton. We held that the \$2 rate was not unreasonable. The interveners insist that the practical question before us is whether or not the conditions have changed since 1910. It is idle to argue that the Commission did not consider the through charge of \$2.25 as a reasonable rate for the through transportation. The division of the joint rate accruing to the Southern Railway from its mines to East St. Louis is the same, 25 cents, under the present and proposed rate, and therefore the question is narrowed to the reasonableness of the rate beyond St. Louis, already held reasonable. The Wabash Railroad does not reach mines in the inner group; the Southern Railway serves only mines in that group. The latter road, therefore, has no interest in the differential to be maintained between the outer and inner groups. The contention of the interveners that the maintenance of the present rate will disrupt and depress rates from other fields appears to be satisfactorily established, and upon all of the facts of record we find that the proposed increased rate is justified and our orders of suspension will, therefore, be vacated as of August 1, 1915."

Attack Colorado Coal Rates

A brief setting forth alleged inequalities and unfairness in Colorado coal rates has been filed with the commission, in the case of the South Canon Coal Company and the Grand Junction Mining & Fuel Co. v. the Colorado Midland et al.

The complainants operate mines at South Canon and Cameo, Colorado. They produce high grade bituminous coal, similar to that produced in Walsenburg and Routt counties, Colorado. Companies operating in these counties are alleged to pay lower freight rates, which amounts to a discrimination against the complainants, it is alleged.

Grasselli Company Wins Case

Reparation has been granted to the Grasselli Chemical Company in its case against the Baltimore & Ohio Railroad.

To Hear Hauto Case

A hearing in the matter of allowances on anthracite coal at Hauto and Nesquehoning, Pa., will be held September 9 at Philadelphia, before Examiner Gibson.

Dismiss Coal Case

After careful consideration of the complaint filed by the Monongahela River Consolidated Coal & Coke Co. v. the Union Railway, the Commission has decided that all points in the case are covered in the decision, referring to allowances to lines of railway serving industries. For this reason the complaint has been dismissed.

Grant Rehearing

Permission to reopen the case of the Reeves Coal Company v. Chicago & Milwaukee Railway, has been granted. The rehearing requested by the Reeves Company against the Chicago and Great Western has been denied.

POTASH IN SPAIN ATTRACTS ATTENTION OF OUR AUTHORITIES

With a fertilizer famine threatening American farmers as a result of the cutting off of supplies of German potash, officials of the State and Commerce departments have undertaken to arrange for the development by American capital of a potash deposit recently discovered in Southern Spain. A concession contract from the Spanish Government already has been laid before interested firms, who are expected to act shortly.

The world supply of potash has been dominated by a German combination controlled by the Imperial Government, which since the war began has declined to release exports. Three cargoes of the product already loaded on ships for the United States and paid for in advance have been held up in German ports for several months.

American commercial representatives abroad recently directed attention to the Spanish deposits, which are near Barcelona, with the information that capital for their development was not available in Spain.

Lloyd is Promoted

The place made vacant on the coal board and the land classification board of the Geological Survey by the promotion of C. E. Leshar, has been filled by the promotion of E. Russell Lloyd. Mr. Lloyd has been working in the geological branch of the fuel section of the Survey for the past four years. He is a native of West Virginia. Mr. Lloyd is a graduate of Oxford University, England, the Ohio-Wesleyan, and the University of Chicago.

WHERE IS ENGLISH ANTIMONY COMING FROM? MANY INQUIRE

Embargo Precludes Exports from Great Britain—Mexico May Be Source of Supply, it is Suggested

It is a matter of some speculation in Washington as to how standard English antimony continues to reach the American market in seemingly abundant quantities. The exports from England and all English colonies were cut off at the beginning of the war. Despite the heavy demand for antimony which has resulted in this country, the English article continues to be sufficient to supply the trade.

Antimony is used principally at present in the treatment of lead for hardening purposes, necessary for the projectiles contained in shrapnel shells.

In some quarters it is suggested that the antimony may be coming from Mexico. So far as it is known, there is but one antimony smelter in Mexico and it never had produced the finished product. There is some suggestion that this smelter, which is owned in England, may have changed its process of treatment.

It is also suggested that other plants for treating antimony may have been built in Mexico since the war.

M. Elasser has a plant at San Pedro, California. It is understood that the work being done there at this time is experimental. In view of the amount of the finished product on the market,

it has been suggested that this plant may not be engaged entirely in experimental work. Considerable secrecy seems to be maintained around the San Pedro plant.

Work East of Uinta Mountains

Examination of phosphate bearing beds in the Uinta mountains is being conducted by A. R. Schultz of the Geological Survey. The examinations are being made east of the mountains. It has been impossible to re-examine the beds on the flanks of the Uinta mountains near Vernal.

Canada Issues Many Reports

During recent weeks the Canadian Department of Mines, has been prolific in its distribution of reports. Principal among them are, "Coal Fields of Manitoba, Saskatchewan, Alberta and Eastern British Columbia," by D. B. Dowling, and a preliminary report upon "Clay and Shale Deposits of the Province of Quebec" by J. Keele.

Brooks Leaves for Alaska

Dr. A. H. Brooks, in charge of Alaskan mineral resources, sailed from Seattle, July 15, on the steamship Jefferson for Alaska, to take personal charge of the work being done there. Dr. Brooks was preceded by a number of geologists and their parties.



PHOTOGRAPH TAKEN RECENTLY AT THE LITTLE RIVER ROADHOUSE, ALASKA—A TEAM OF THE ALASKAN RAILWAY COMMISSION IS SHOWN ON THE RIGHT

RULINGS OF STATE TAX COMMISSIONERS HELD TO BE FINAL UNLESS FRAUD IS SHOWN

Board Passing on Assessments Bears Same Relation to Public as do the Courts of Law—Cost of Mining and All Other Features Must be Considered in Valuation—Other Legal Decisions

An assessment of mining property for taxation cannot be said to be fraudulent although excessive, where the State Board of Tax Commissioners did not act in reckless disregard of duty and in opposition to what must necessarily be the judgment of all competent persons, and where, in fixing the value of a mine the state board used the information produced for it by disinterested experts of high standing in accordance with authority granted by an act of the Legislature of the state. And while the sum fixed may be too high or too low, the assessment cannot be changed where the tax commissioners, one of whom was familiar with the development of iron mines and the particular formation, acted honestly, fairly and in good faith upon all the information at hand, made a proper and legal assessment in fixing the value of the mine in controversy, and the assessment so made must be taken as conclusive and binding.

Sundry Lake, Iron Company vs. Wakefield Township, (Michigan) 153, Northwestern, p. 14.

FRAUD ONLY PLEA

In a suit to declare void assessments of mining property the court will not consider complaints as to results reached by the State Board of Tax Commissioners, except such as are based upon fraud or the adoption of a fraudulently wrong principle, as the state has confided these rights to the protection of the State Board of Tax Commissioners and has trusted to its honor and capacity, in the same manner as it confides the protection of other social relations to the courts of law.

Newport Mining Company vs. City of Ironwood, (Michigan) 152 Northwestern, p. 1088.

METHODS OF VALUATION

The statute direction as to the taxation of mining property is that the quality and value of minerals, when known to be available therein, must be considered by the tax assessors in determining the value of land for taxation; but a number of factors have to be considered in determining whether, it being apparent that there is a deposit of ore in a given locality, it is available where there is no mine or mining carried on, and this availability, its commercial value and the ease and cost of mining, must be considered as well as the quality and quantity of the ore body. Another factor is the price to be paid per ton during the conducting of mining operations, or a variable price depending upon the quantity or selling price of ore mined or shipped or both, considering the expense of opening the mine, of conducting mining operations and the royalty, if any, to be paid; but

for purposes of taxation the state is not bound to accept the amount of royalty bargained for by the land owners as controlling its valuation of the land.

The method of assessment is not difficult where a mine is open and in operation, and where with the equipment at a given rate of mining, the ore body in sight would be exhausted in a determinable period, but the value for assessment purposes would be more difficult as to the quantity of ore not in sight, in considering the present value of the land, but if as to this the method adopted was not wrong in principle, and was according to the methods of business to ascertain such values, where a rule or method exists by which engineering and business men ascertain the value of the ore bodies for the purpose of buying and selling them, the state through its taxing officials is justified in using similar methods in ascertaining values for taxing purposes.

Newport Mining Company vs. City of Ironwood, (Michigan) 152 Northwestern, p. 1088.

WISCONSIN LAW

The Wisconsin law of 1913 (Chapter 367), relating to the taxation of mineral rights, must be treated as a tax statute enacted for the purpose of raising revenue for governmental purposes, and as including in its scope all cases by which exception, reservation or expressed grant, the title to ores or minerals in the land, together with the right of exploring for and mining the same, are vested in some persons other than the owner to the title of the land and its beneficiary used for any and all other purposes.

The existence or value of ores or minerals beneath the surface undisclosed is not easily ascertainable, and this distinction cognate to the purpose of the statute which would support the discrimination found in the statute requiring such owner to furnish the assessor his affidavit of value, while the owners of other estates in the same tract of land are not required to do so; this classification of itself would not render the statute invalid under either the Federal or State Constitution, but another provision of the statute limiting the bidders in case the mining property is offered for sale for delinquent taxes, to the state or county, or the persons owning the remaining interest in the land, renders the act unconstitutional, as this provision is not only not germane to but in contravention of the very purposes of the statute, and discriminates injuriously against the owner of mining property, and such a classification, with reference to bidders at tax sales, is wholly arbitrary and without legal foundation.

State *vs.* Donald, (Wisconsin) 153 Northwestern, p. 238.

LIABILITY FOR ASSAULT

A mining corporation which stations at its mine men and employees and other agents for the purpose of guarding and protecting its property, is liable for an assault committed by such person or agents upon a person upon the public highway.

Pennsylvania Mining Company *vs.* Farnigan, (Pa.) 222 Federal, p. 889.

LIABILITY FOR INJURY

A mining corporation is not liable for an injury to an experienced miner, caused by an explosion of powder in the process of mining, on the ground that the steel can in which the miner kept his powder was in a damp place in the mine and that because of the dampness of the powder it failed to explode at the proper time, but was exploded on a day following by the miner's pick.

Lehigh Valley Coal Company *vs.* Calausky, (Pa.) 222 Federal, p. 664.

LIABILITY FOR NEGLIGENCE

A fire boss in a coal mine in Pennsylvania is a state official and where it appears that he does not represent the mine operator in any respect or perform any duties except those imposed upon him by statute, he cannot bind the mine operator by any statements or representations as to the conditions or safety of the mine or of the methods of storing and using explosives.

Lehigh Valley Coal Company *vs.* Calausky, (Pa.) 222 Federal, pp. 664-666.

MANDAMUS

An applicant for a certificate as a mine inspector under the Pennsylvania Act of June 8, 1901 (Pennsylvania Laws, 535), cannot by mandamus compel the board of examiners to issue a certificate where the petition does not allege that the petitioner answered ninety per centum of the questions stated in his written examination, and fails to aver that the petitioner passed a successful examination, and states no fact which, if true, would show fraud or misconduct in the refusal to award him a certificate. The board of examiners may in such case exercise discretion in performing their duties and at least four of them must be convinced that the applicant has passed a satisfactory examination before he is entitled to a certificate of qualification, and if these refuse, it is the end of the matter, and mandamus does not lie.

Reese *vs.* Pollard, (Pa.) 94 Atlantic, p. 246.

California Miners Give \$1,000

The California Metal Producers' Association has contributed \$1,000 for the third annual joint field meet of the Bureau of Mines, and the American Mine Safety Association, to be held at San Francisco, September 23-24, 1915. This

meet will be preceded on September 22, by a California first-aid contest.

LAND OFFICE SELECTS MEN FOR COAL WORK IN ALASKA

George W. Evans, of Seattle, has been selected by the General Land Office to take charge of the mining engineering portion of the General Land Office work in the Behring River coal field.

Sumner S. Smith of the Bureau of Mines staff, has been selected for the same work in the Matanuska field.

UTAH COAL MINES HAVE ANOTHER REMARKABLE YEAR

With their production of coal valued at \$5,000,000 for 1914, Utah mines again have established a remarkable record, according to figures just compiled by C. E. Lasher, coal statistician of the Geological Survey.

CHEAP PETROLEUM HURTS ALABAMA COAL BUSINESS

Due to the supplies of petroleum in the South, and to the low price which has been prevailing for coal, there was a slight decrease in 1914 of the Alabama production. Figures just made public show the 1914 production amounts to 15,593,422 tons, valued at the mine at \$20,849,949. This is a decrease of 11.8 per cent. in quality and 9.06 per cent. in value, as compared with 1913. Disturbed conditions in Mexico affected the consumption of coal in that country. During the year, 3,940 days' time were lost by miners through strikes.

GEOLOGICAL SURVEY WATCHING CLOSELY FOR NITRATE FINDS

Constant watch is being maintained for nitrate or potash deposits. The people of the United States will be benefited by the discovery of any new deposits in this hemisphere. For this reason the Geological Survey is taking particular note of any reported discovery in South American countries.

OUTPUT OF METAL MINES IN

THE EAST TOTALS \$11,437,707

Eighty-one metal mines operating in the eastern States mined products valued at \$11,437,707 in 1914, according to the Geological Survey. Of this number forty-five were gold placer mines, thirty-six were deep gold mines, seven were zinc and seven copper mines. Many of the gold placers have very low production, but nevertheless were operated at a profit.

The total gold output was valued at \$173,589. This is an increase over the 1913 production. The average recovery of gold per ton, from silicious ore treated, was \$4.69.

Practically all of the copper mined in the eastern States comes from Tennessee. The total output was 19,555,362 pounds.

Zinc is mined in New Jersey, Virginia, New Hampshire and Tennessee.

LIFE LOSS IN MINES HAS DOLLARS-AND-CENTS VALUE OF \$90,000,000 IN TEN YEARS

**Consumers Pay This Big Item Added to Cost of Coal Production—Bureau of Mines
Does Effective Work in Lowering Number of Accidents**

While hundreds of thousands of men are being slaughtered in the great European war, and when the ingenuity of man in foreign countries is taxed to the utmost to devise yet more frightful engines for killing men, it is in striking contrast that the United States Government announces through the Bureau of Mines that preparations are being made to hold in San Francisco a great national demonstration in the saving of human life and in alleviating the sufferings of those who are injured in the pursuits of peaceful industry.

The third national mine safety meet in behalf of the army of more than a million miners is to be held at the Panama-Pacific exposition grounds, September 23 and 24, under the auspices of the Bureau of Mines, the American Mine Safety Association and the California Metal Producers Association. During that week, the American Institute of Mining Engineers, an organization of 5,000 members, and the American Mining Congress, a national body of several thousand members, will hold their annual meetings at the exposition and will join in the safety demonstration, which promises to have as spectators the largest gathering of mining men ever assembled in the United States.

FIFTY TEAMS TO ENTER

It is expected that more than fifty teams of miners from all over the United States, trained in rescue and first-aid work, will be present to compete in the several events. Gold medals are to be awarded by the American Mine Safety Association for interstate supremacy in rescue and first-aid work and silver and bronze medals by the American Red Cross Society to teams that make creditable showings. In addition there will be special medals and prizes to be competed for by groups of states, such as the Southwestern states, the Rocky Mountain states, the Pacific coast states and the Southern states.

Already miners all over the country are preparing for the great national meet. Both rescue and first-aid teams are in training in many mining communities and certain states and groups of states are holding elimination contests so that they may be represented at San Francisco by the strongest possible teams. Six Southwestern states, Texas, Arkansas, Oklahoma, Kansas, Missouri and Iowa, have already held state meets and they are now preparing to hold an interstate meet in Kansas City in July. The Southwestern Interstate Coal Operators Association is managing this interstate meet and expects to have 10,000 persons present. The winning team at Kansas City is to be given \$1,000 as a prize to defray its expenses to San Francisco and return.

The annual meeting of the American Mine Safety Association will be held at Birmingham, Ala., September 4, and this will be the occasion of the Southern Interstate contest in first aid and mine rescue, the winning team to be sent to San Francisco. One of the big coal-mining companies in Illinois and another in the Pocahontas field of West Virginia have already made arrangements to send teams to compete in the events. The Homestake Mining Company of Lead, S. Dak., will also send an individual team. It is further expected that there will be three teams each from the states of Colorado, Montana, Wyoming, Utah and New Mexico, five each from the states of Arizona, Nevada and Washington, and a dozen teams from California. Where a state is represented by more than one team, there will be elimination contests on the first day of the meet, September 23, and the winners of these contests will meet the eastern teams the next day for interstate supremacy.

That the miners have a problem on their hands is seen in the death statistics for the mines. In the year 1913, the last year for which statistics are available for all the mines and allied industries, 3,762 men were killed and 177,000 injured. This includes coal mines, metal mines, quarries, ore-dressing plants and smelting plants.

TWENTY-SIX THOUSAND DIE

In the last ten years, in the coal mines alone, there have been 26,000 deaths, a fatality rate of three and three-quarters men in every 1,000 employed, and more than a million men injured.

It was to reduce the death-rate and lessen the number of injuries that the Federal Government early in 1908 took up its work in behalf of the miners. The first marked progress was in 1911 when the first national mine safety demonstration was held in Pittsburgh, Pa., in the presence of the President of the United States and 20,000 miners. Since that time there has been a wonderful development throughout the country in both rescue and first-aid work.

IN DOLLARS AND CENTS

"No one likes to estimate the money value of a human life," said Van H. Manning in discussing this phase of the work, "but at times it becomes necessary to do this, especially in working out the economics of compensation acts. It is a reasonable estimate that during the past ten years more than 30,000 men have been killed in connection with the accidents in the mining industries of this country. It is impossible to estimate the number injured or who have suffered from bad health conditions. It is impossible to estimate the number of men with health shat-

tered through these conditions who have had to give up their work years before their natural time or the number of dependents who have suffered thereby.

"If it is assumed that each human life lost is valued at \$3,000, it will be seen that the deaths alone in the mines have cost in the ten years \$90,000,000.

"As to the metal mines, metallurgical plants and quarrying operations, unfortunately there are few reliable data regarding health conditions in the United States; yet there are sufficient isolated figures concerning certain districts to indicate that the death-rate from occupational diseases is even greater than the accident rate."

BUREAU OF MINES EXPERT

AIDS POLICE IN BOMB CASE

It is interesting to know that the Washington police turned to the Bureau of Mines immediately upon learning that a bomb had been exploded in the Capitol, just after the explosion had taken place. It was very necessary to establish at the very earliest possible moment whether it was the result of an accumulation of gas or other accidental cause.

Dr. C. E. Munroe, who has charge of the chemistry of explosives for the Bureau of Mines, made an investigation. Long before Holt's confession he determined that the explosion was due to a dynamite bomb.

MINING CONGRESS ALWAYS READY TO HELP MEMBERS

Any member of the American Mining Congress is entitled to apply to the Washington office for any service which can be rendered. Matters will be laid before any department or will be taken up with the White House. Oftentimes more can be accomplished by personal interviews than by correspondence.

Washington has a wealth of reference facilities. These are at the service of the members of the American Mining Congress if anyone will acquaint the secretary with his desires.

The staff of the Washington office is always at your service.

A. G. MACKENZIE IS SELECTED AS UTAH CHAPTER SECRETARY

The Utah Chapter of the American Mining Congress has elected A. G. Mackenzie as its secretary. Mr. Mackenzie is a very capable man and is thoroughly familiar with mining conditions in Utah.

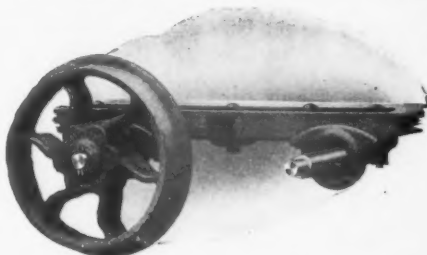
The Utah Chapter promises to accomplish much in the state and to add not a little to the strength of the national organization.

Issues Work on Unemployment

"Unemployment" is the subject of a voluminous work by the American Association for Labor Legislation. While mining is not treated separately, many of the principles and conditions surrounding employment in mines are discussed.

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ARE YOU REAPING ANY BENEFIT FROM THIS EXTENSIVE WORK?

DO YOU KNOW WHAT THE GOVERNMENT IS DOING TOWARD AIDING THE VERY KIND OF WORK IN WHICH YOU ARE ENGAGED?

ARE YOU TRYING TO WORK OUT WITH YOUR LIMITED FACILITIES AND FINANCES A PROBLEM ON WHICH THE GOVERNMENT IS STUDYING?

ARE YOU DUPLICATING EFFORT AND GOING TO NEEDLESS EXPENSE AND TROUBLE?

IS MORE AID BEING GIVEN BY THE GOVERNMENT TO OTHER MINING CAMPS THAN TO YOUR OWN?

YOU WILL BE ABLE TO KEEP ABREAST WITH JUST SUCH MATTERS IF YOU READ

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The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation, through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

If you are interested in this work, now is the time to help; do not wait until those who are now carrying the burden have become discouraged.

The appended application blank will show the way. Come in and bring the neighbor who should join this movement. Mail application to

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Munsey Building, Washington, D. C.

THE AMERICAN MINING CONGRESS

APPLICATION FOR MEMBERSHIP

.....191.....

I hereby make application for membership in THE AMERICAN MINING CONGRESS and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same.

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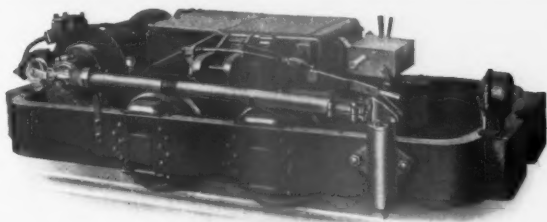
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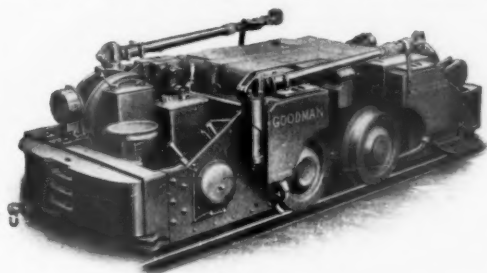
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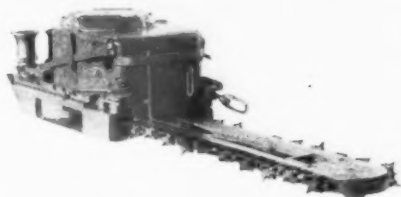
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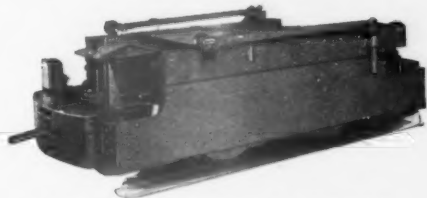


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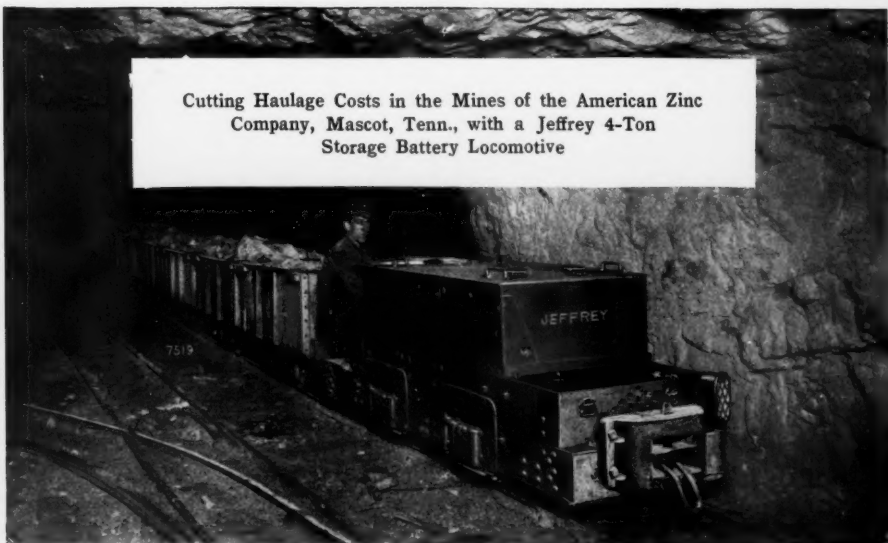
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